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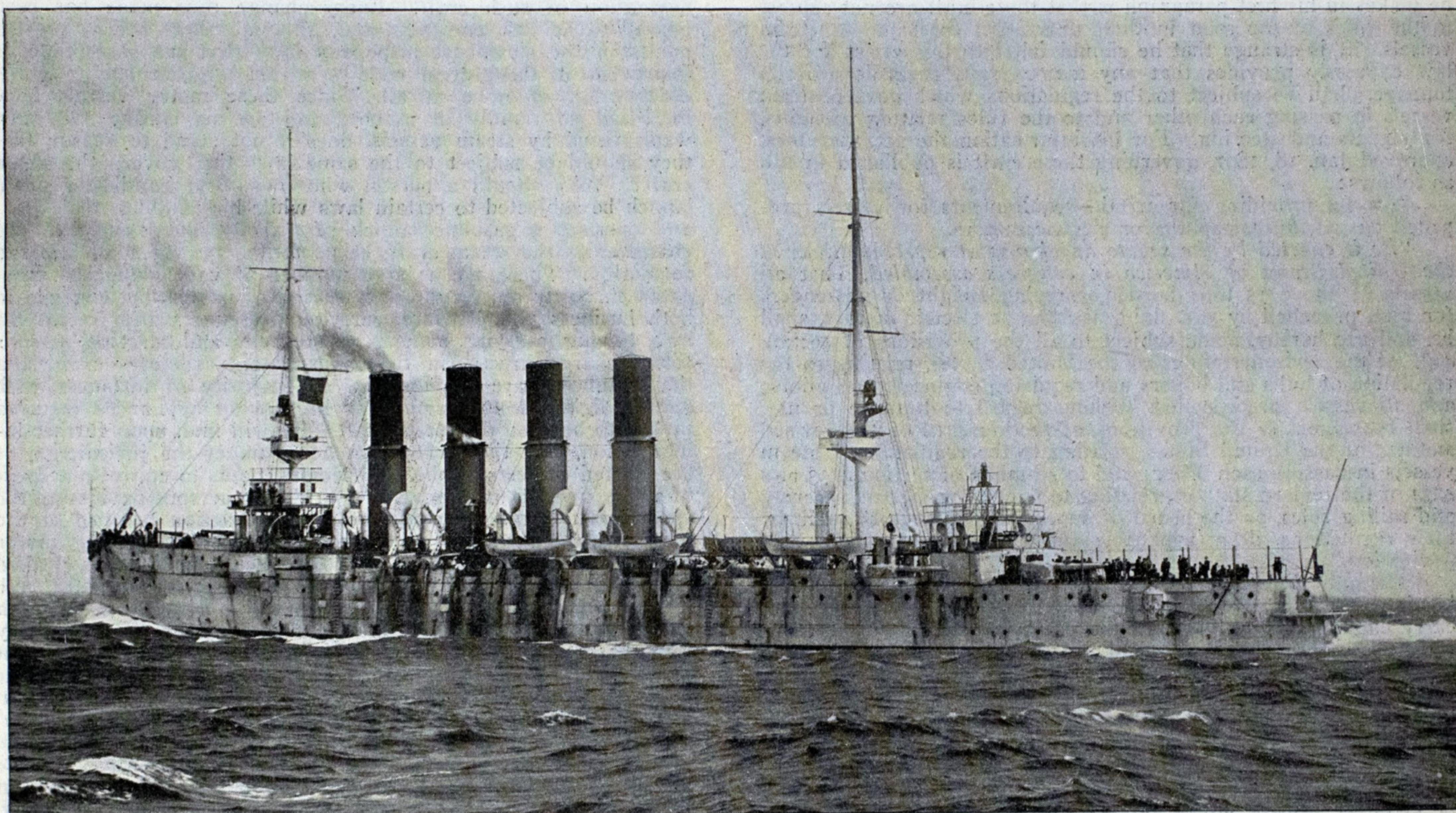
No. 8

FERRY BOATS FOR LACKAWANNA RAILROAD.

Contract has been awarded to the Newport News Ship Building & Dry Dock Co. by the Lackawanna railroad for its four large, steel, screw, double-decked ferry boats, to be operated in connection with the new Twenty-third street ferry in New York harbor. As in the designs for the ferry terminal, no expense has been spared to make these new ferry boats a distinct advance over anything that has been attempted in the ferry service of New York. The new boats will be 231 ft. long, 62 ft. beam and have a draught of 10 ft. 6 in. Steam will be supplied by two Scotch boilers for two sets of compound engines, the horse power being

ADVISORY CANAL COMMISSION.

It will be noted elsewhere that Gov. Odell has selected an advisory commission of engineers for the enlargement of the Erie canal to accommodate barges of 1,000 tons capacity. The personnel of this commission is an assurance of efficient and faithful service. State Engineer Bond has had the opportunity in his present office to become thoroughly familiar with the canal system and has been intimately associated with the plan of improvement embodied in the law under which the work is to be done. Maj. Symons was connected with the services of the Deep Waterways Commission, as well as those of the Greene



Russian Cruiser Variag Reported Destroyed. This Remarkable Vessel made 24.6 Knots on her Trial Trip.

Photograph copyrighted by W. H. Rau.]

[Built by Cramps, Philadelphia.]

1,400, and the speed 14 miles an hour. The plans show a boat considerably larger than the largest ferry boats now operating on the North river, designed with special reference to handling large crowds comfortably, and making regular trips through conditions of storm and ice. Special attention has been given to the sub-division of the hull by water-tight bulkheads, so that in case of collision the safety of passengers will not be endangered and the ferries will have the strongest construction ever used in ferry service in New York. The general finish of the interior will be the colonial style, with mahogany seats, stairs and trim, and white paneling. The floors of the cabins will be covered with a form of rubber tiling and special attention will be given to lighting, so that by day or night a passenger will be able to read a newspaper in any part of the cabins. The lower cabin will be furnished with a system of cross seats on the inner side, and an arrangement of arches making an effect more attractive than that yet attempted in ferry boat service. The upper cabin will also have mahogany and white finish, tiled floor, and a large seating capacity arranged so that in the whole boat 1,000 passengers can be accommodated without crowding. The boats will be heated and ventilated by an indirect hot air system, the fresh air being carried through heaters placed below decks, and forced into the cabins from above through concealed ventilating ports; thus assuring not only warmth but fresh air in the extreme conditions of winter cold. More window space has been given, and in every way the comfort of the traveling public has been completely provided for. Specially designed steel bows will afford greater protection in case of possible collision. The plans have been furnished by Gardner & Cox, No. 1 Broadway, working in consultation with Col. E. A. Stevens of Hoboken.

Rear Admiral Geo. W. Melville, retired, formerly engineer-in-chief of the navy, has gone to Great Britain and Germany for the purpose of studying turbine machinery.

Commission, which first reported in favor of the 1,000-ton barge plan improvement for the New York state canals. His qualifications to act are unquestioned. Messrs. Corthell and Brackenridge are engineers of eminence. While Mr. Frye has had less experience in this special line than any of these he will undoubtedly prove the wisdom of his selection. Unfortunately this is not a body that will have actual control and direction of the work, but that it will be an influence tending to economy, integrity and common sense is a foregone conclusion.

MARITIME HEARINGS IN WASHINGTON.

The representatives of the shipping interests in favor of the passage of the Frye bill, proposing to place commerce between the United States and the Philippines Islands under the coastwise navigation laws after July 1 next, are trying to win Secretary of War Taft over to their side of the question. As far as can be gathered from his public utterances, Secretary Taft is opposed to the bill. However, he has agreed to meet them in conference on Thursday of this week. On the following day the shipping men will appear before the house committee of merchant marine and fisheries in support of the bill. It had been the intention of this committee to postpone all consideration of the bill until after it had been passed by the senate, but this hearing will be given so as not to require the shipping men to make two trips to Washington. It is not the purpose of the committee to hear the opponents of the bill next week, but they will be given an opportunity to appear after the senate has acted on the measure.

Two turbine steamers are now being built in Germany, one at Danzig and the other at Kiel. The first is a cruiser for the Imperial navy of about 2,000 tons gross and 10,000 H. P. with eight screws; and the other is a small passenger of 500 tons gross and 1,200 H. P. with three screws.

LICENSED OFFICERS ON SMALL MOTORBOATS.

The Other Side Discussed by a Steamboat Inspector—Pros and Cons of an Interesting Controversy.

Nothing that the Review has ever said on the subject of the bill requiring gasoline launches and motor boats to carry engineers and pilots should be construed to mean that the operators of these boats should not conform to the common laws of courtesy any more than that an individual should not conform to them. A man is expected to be a gentleman wherever he may be. If he is not by nature no amount of legislation will ever make him one. Therefore it goes without saying that motor boats and gasoline launches should observe the common rules of navigation precisely as a pedestrian on the sidewalk should respect the rights of those who, like him, are threading their way in and out. Of course motor boats under 15 tons do not now come under the supervision of the steamboat inspection service, requiring inspection of machinery and boilers and the carrying of licensed officers, and it is only human nature that that circumstance should rub. Certain inspectors have taken issue with the articles that have been published in the Review concerning the Grosvenor bill. A communication is published below from one of them whose name is at his request withheld. The point which he makes in his first paragraph is that these craft are not subject to the rules of the road in their navigation the same as steam vessels. It is strange that he should fall into this error, for the law expressly provides that any motor craft, regardless of its tonnage, shall be subject to the regulations which govern steam vessels in passing each other and to the rules relating to lights, fog signals and steering. For his information the act, therefore, approved Jan. 18, 1897, governing these craft is published in full as follows:

"An act providing for certain requirements for vessels propelled by gas, fluid, naphtha or electric motors.

Be it enacted by the senate and house of representatives of the United States of America in congress assembled, That all vessels of above 15 tons burden, carrying freight or passengers for hire, propelled by gas, fluid, naphtha or electric motors, shall be, and are hereby, made subject to all the provisions of section 4426 of the revised statutes of the United States, relating to the regulation of hulls and boilers and requiring engineers and pilots; and all vessels so propelled, without regard to tonnage or use, shall be subject to the provisions of section 4412 of the revised statutes of the United States, relating to the regulation of steam vessels in passing each other; and to so much of section 4233 and 4234 of the revised statutes, relating to lights, fog signals, steering and sailing rules, as the board of supervising inspectors shall, by their regulations, deem applicable and practicable for their safe navigation."

The only difference between this measure and the Grosvenor bill is that the Grosvenor bill requires launches under 15 tons to carry engineers and pilots, but the provisions concerning the observance of the rules of the road are not altered. The only issue therefore involved is to require these little craft to carry engineers and pilots. Sailing vessels under 700 tons are not required to carry licensed officers and are therefore no more responsible to the inspectors of steam vessels than power boats under 15 tons. Does any one pretend that a sailing vessel of 700 tons is a less menace to navigation than a little power boat? The power boat is certainly always under control, which surely cannot always be said of a sailing vessel.

In the second paragraph the inspector makes the point that owners of small steamers may, under certain conditions and after an examination, be licensed to operate his own steamer. He infers that the same privilege would be extended to the owners of motor boats. Undoubtedly it would; but that is the very necessity that the owner of the motor boat desires to avoid. Consider the domain of this country and its magnificent distances. It covers a whole continent and it is very sparsely settled. A thousand miles of space may intervene between the owner of a motor boat and the man who is to examine into his qualifications to operate it. Is the farmer who uses this little vessel, scarcely bigger than a rowboat, to carry his produce to some convenient distributing point, to journey periodically over hundreds of miles in order to be examined as to his competency? It is the adaptability of these little boats as personal beasts of burden that has so extended their usefulness. Formerly a farmer toiled wearily with his horse and cart through miles of mud or rowed laboriously along the river; now he has a perfectly reliable and easily understood motor to do the work for him. There is absolutely no reason why he may not have such a craft and why he may not run it. Is it not a curtailment of personal liberty to say that he shall not operate such a vessel? He has as much right to do so as he has to breathe; and the same is true of supply houses engaged in chandlery business along water fronts.

In the third paragraph the inspector says that after being granted licenses to run their boats the owners would know and abide by the rules laid down for the safe navigation of vessels. They are now required to abide by these rules as the following circular, issued by the board of supervising inspectors, will show:

"All the rules relating to lights, fog signals, steering and sailing contained in section 4233, revised statutes, and applying to steam vessels, shall also apply to all vessels propelled by gas, fluid, naphtha or electric motors, and between any of such vessels and steam vessels, on the *Atlantic and Pacific coast inland waters*; with the exception that the red and green lights on open vessels of 10 gross tons and under propelled by gas, fluid, naphtha or electric motors, may be exhibited from a combined lantern showing a red light and a green light, as described in rule thirteen

of said section 4233, in lieu of all other lights required for vessels under way. When the range and side lights are carried on such vessels of ten gross tons and under, the after range light shall be carried at an elevation of at least 7 ft. above the light at the head of the vessel. Such vessels of 10 gross tons and under, if provided with a bell of 6 in. in diameter, of good tone and quality, to be rung by hand in fog or thick weather, shall be deemed to be properly equipped in that respect."

Concerning the remainder, if the inspector will inquire, he will find that licensed officers of western rivers have been very insistent for the passage of the Grosvenor bill, though the Review quite agrees with him that no competent officer would want such a position. The communication follows:

"The present system of inspection of steam vessels and the examination and licensing of persons intended to be placed in charge of them, was instituted primarily as a measure for the safety of the public at large. From its small commencement, it has gradually been enlarged, as the need became apparent, to include every class and size of steam craft. The changes that have been made, have been made only after due consideration by a body of practical men who have had years of practical experience in the handling of water craft of all kinds and in the management of men who have been employed to assist in the navigation of such craft. Every change thus made has been proved to be just and wise and, although there are at present points in the steamboat inspection laws that are susceptible of improvement, the present code is a vast improvement over the older ones, or none at all. Since these motor vessels have increased so rapidly in number and are navigating the same waters used by steam vessels, does it not stand to reason that they should be subject to the same laws that govern the steam craft? Why should a person who owns and handles a steam launch be subjected to certain laws while his neighbor who owns and operates a gasoline launch of exactly the same size and character as the steam craft, be perfectly free from all law and regulation. There are a large number of vapor launches navigated currently during the open season of navigation, engaged in both business and pleasure, carrying passengers and freight for hire, towing, carrying supplies to steamers and carrying persons for pleasure, directly in the same waters as steam craft, and these launches are provided in the majority of instances with neither lights, sound signals or life saving appliances required by law to be upon the steam craft. He will find, upon further investigation, that the fact of not being under the jurisdiction of the United States steamboat inspectors, tends to cultivate a spirit of aggressiveness and audacity towards the persons navigating the steam craft, which causes more or less friction because of the utter disregard of the pilot rules by those navigating motor vessels, and this disregard of the regulations established is cloaked under the excuse, 'Well, what are you going to do about it? We are not required to observe the pilot rules.' Have you forgotten so quickly the accidents resulting in loss of life that this very thing has occasioned? Have you forgotten the experience of that launch full of young people at Toledo, O., which, carrying neither lights or life-saving appliances, dashed out into the river full in the face of a steam tug properly equipped and running in compliance with all the laws of the United States, whereby some of the young people were never brought to shore alive? Have you also forgotten the experience of that launch full of people on Pine lake only last summer that dashed full speed into a steamer, whereby three of the occupants of the launch were killed outright and others drowned? Do you, in the face of these facts, still cling to your assertion that the proposed bill is a direct infringement on personal rights? Would you have taken that stand if some member of your own family had been in one of those launches run by a person who either was grossly ignorant or grossly careless in regard to the common, every-day pilot rules as adopted by those placed in charge of the steamboat inspection service? Did this question ever come home to you at all? The above citations are simply instances, and as is well known, do not cover the list of fatal and serious accidents due to carelessness or ignorance in the handling of motor vessels. After a number of years experience as a licensed officer upon the great lakes, during which time the gasoline launch has become popular, many incidents have come under the personal observation of the writer hereof, wherein serious consequences involving loss of life and damage to property were narrowly averted. It seems to be the habit of the persons operating small gasoline boats to get themselves directly in the path of large steam vessels and then attempt to dispute the right of way. The steamer is handicapped by reason of the gasoline boat being in many instances unprovided with a sound signal of any kind and thus it is impossible to exchange the proper signals for meeting and passing, even if the person in the launch understood what those signals meant. In cases where a sound signal is provided in the gasoline boat, 'cross signals' are more often used than not, thus resulting in confusion that might result seriously, and at the very least, results in the large steamer losing time until the course and intention of the gasoline vessel has been discovered by her actions. It must be remembered that a large steamer cannot be stopped, started or controlled so easily and quickly as a small vessel, and when, through misunderstanding on one part and ignorance or neglect on the other, a large steamer and a small gasoline vessel come together, the steamer is invariably blamed while the oftentimes incompetent or ignorant person in charge of the gasoline vessel is indignant at what he considers the antagonism of the steamboat man. While it may be readily seen into what complications an ignorant person in a gasoline vessel may fall, how much is this possibility increased at night or in fog or any kind of thick

weather when even experienced steamboat men have difficulty in keeping clear of each other. At present, there is no legal way to control those who operate the motor vessels to be sure that only persons who may reasonably be expected to exercise good judgment and who know the rules of the road are in charge.

"Second: In refutation of the statement that the bill if passed would mean that those now owning vapor and electric launches would have to sell them, it might be well to call your attention to the laws of the United States that provide that anyone owning a small steamer navigated under certain conditions may, after a proper examination and if found qualified, be licensed to operate his own steamer. This law would, no doubt, be effective still in the case of gasoline and other motor vessels after the passage of the Grosvenor bill even as it is now in the case of motor vessels, 'of 15 tons or over carrying passengers or freight for hire,' a number of the owners of such craft having been examined and licensed by the United States local inspectors to navigate their own vessels. Now, if vessels of a certain size must comply with the regulations in regard to having on board persons to operate them who are familiar with the rules in regard to meeting and passing other vessels, etc., why should not vessels of any size be required to comply with the same law as is the case with steam vessels? Why should a vessel of a certain size be restricted in regard to the number of persons she may carry and be required to carry a certain number and character of life-saving appliances for use in case of accident, while another vessel of the same class but of smaller tonnage is allowed to take on board as many people as it is possible to induce to take the trip, carrying no life-saving appliances whatever, and with persons in charge who are either densely ignorant or wilfully careless in regard to the laws governing the meeting and passing of water craft, thus endangering the lives of those on board?

"Third: In regard to the statement that the operation of running a launch requires less skill than to row a boat, it seems almost ridiculous to say a thing, for to anyone at all familiar with the situation, the incorrectness of this statement becomes at once apparent. Else why should so many articles be written, published in the standard marine periodicals and eagerly devoured by the owners of gasoline engines in regard to the difficulties of running a gasoline engine? Why should so large a number of owners of gasoline boats remove the gasoline engines and substitute steam power? Why, also, should one be treated to the sight any pleasant summer afternoon of a grinning, derisive crowd on the dock watching the efforts of Mr. Gasoline Boat Owner as he sweats and struggles and swears in his efforts to get that 'pesky' engine to do its work? It is the firm belief of the writer hereof that an enormously large percentage of the persons now operating vapor launches would, after the passage of the Grosvenor bill referred to and examination, be granted licenses and allowed to run their boats as usual, but they would be required to know and abide by the rules laid down for the safe navigation of vessels. The small percentage who would fail to secure a license to run their boat would be those who are so ignorant or incompetent that their removal from the water would be a benefit to those allowed to remain, inasmuch as it would remove a menace to the safety of those justly entitled to navigate upon the water highways. Flagrant cases of drunkenness, misconduct, etc., on the part of those operating vapor launches would be summarily dealt with as is now the case with those handling steam vessels, which you must admit would insure greater protection to those who do behave themselves and have a right to use the water. At present there is no guarantee that the person who handles a gasoline launch with a member of your family or mine as a passenger is not an habitual drunkard or otherwise incompetent to handle a boat wherein are the lives of those dear to us. The comparison made between the motor boat and the automobile is not fairly stated, for there are in every large city, as our author would no doubt discover were he the owner of an automobile, regulations in regard to speed, etc., of autos and those who operate them must pass an examination before they are allowed to use the public streets. Then, too, suppose an auto breaks down, collides with some other vehicle or otherwise 'runs amuck.' How quickly would some passer-by assist to pick up the unfortunate occupants of the auto, or how quickly would the ambulance arrive to care for the injured who have alighted on dry land, mind you, as compared to the passenger in a disabled or wrecked gasoline boat away from the land, who has no friend near to assist, no ambulance to dash up and carry him to his home or the hospital, and in many, many cases, there is not even a life preserver or even a piece of plank to cling to. Is the comparison well drawn? Apparently, there is not even a comparison between the two.

"In regard to the opinion expressed that 'the animating influence behind this measure is undoubtedly exerted by societies of pilots and engineers for the sole purpose of creating additional places for themselves,' it appears absurd. The associations of licensed officers of steam vessels are not behind the Grosvenor bill, and that their sentiment while in favor of it, perhaps, is actuated by motives of self-protection and the protection of the general public. It may be stated that very few, indeed, of the persons who serve the necessary time and obtain a license authorizing them to act in charge of a large lake steamer would aspire to the position of pilot or engineer of a gasoline launch, no matter what her size, class or business."

LICENSED OFFICER.

Representative Loudenslager has introduced a bill in the house of representatives providing that automobiles cannot be carried on board ferries while fire is burning in them.

THE TRANSATLANTIC PASSENGER TRADE.

The number of vessels in the transatlantic trade which entered New York harbor last year was less by 368 than in the year 1902, nevertheless there was a considerable increase in the number of passengers landed there, especially as regards 'tween-deckers. Altogether, from foreign ports, 4,013 vessels arrived at New York in 1903—of this number, 1,870 were British, 676 American, 509 German, 337 Norwegian, 153 Italian, 110 Dutch, 108 French, 78 Danish, 50 Cuban, 42 Spanish, 32 Austrian, 22 Belgian, 20 Portuguese, 4 Russian, 1 Swedish, and 1 Greek. Of the whole number, 3,114 were steamers, 1,249 being British, 494 German, 438 American, etc. The number of passengers brought from foreign ports was 161,276 first and second cabin, and 642,957 in the steerage, against 139,848 and 574,276 respectively in the year 1902. The 'tween-deckers were greater in number than in any previous year. Statistics emanating from New York show how this immense passenger traffic was divided among the companies engaged in it, in the years 1903 and 1902, namely:

	1903.	1902.
	Passengers. Steerage. Cabin.	Passengers. Steerage. Cabin.
Hamburg-Amer. Line (Hamburg)	88,721	22,792
N. German Lloyd (Bremen)	89,503	32,184
Red Star Line (Antwerp)	54,726	8,866
Cie. Gen. Transatlantique (Havre)	51,454	11,502
White Star Line (Liverpool)	45,705	22,418
N. Ger. Lloyd (Mediterranean)	29,576	3,847
Holland-Amer. Line (Rotterdam)	36,761	8,470
Cunard Line (Liverpool)	33,716	18,448
Cunard Line (Mediterranean)	241	74
Nav. Gen. Italiana (Medit.)	27,379	1,556
American Line (Southampton)	16,081	10,560
Fabre Line (Mediterranean)	25,124	194
Anchor Line (Mediterranean)	26,643	104
La Veloce Co. (Mediterranean)	31,148	797
Prince Line (Mediterranean)	16,519	94
Anchor Line (Glasgow)	11,921	8,829
Hamburg-American Line (Medit.)	20,333	1,170
Cia. Transatlantica (Medit.)	?	?
United S. S. Co. (Copenhagen)	14,642	2,671
Empreza Ins. de Nav. (Lisbon)	?	?
Linha de Vap. Portu. (Oporto)	?	?
Allan State Line (Glasgow)	1,686	1,934
Atlantic Transport Co. (London)	?	?
Others	?	?
	6,908	897

It will be observed that the list is *minus* the last year's returns of some of the smaller companies, but the general result is not affected by them, as the totals are given above. As regards the emigration movement from the Mediterranean to New York, the annexed figures show that it increased considerably last year, and the shares of the various companies in this branch of the traffic are thus recorded:

	1903.	1902.
Hamburg-American Line	21,503	15,285
North German Lloyd	33,423	32,802
Cunard Line	315	...
Navig. Gen. Italiana	28,935	32,743
Fabre Line	25,318	21,755
Anchor Line	26,747	26,238
La Veloce Co.	31,942	20,709
Prince Line	16,613	14,846
Cia. Transatlantica	?	1,554
Total	184,796	165,932

It will be interesting to see what was the part taken in this passenger traffic from North European ports by the companies now forming the Morgan combine. The figures are:

	1903.	1902.
Red Star Line	63,592	53,997
White Star Line	68,123	58,627
Holland-American Line	45,231	39,625
American Line	26,641	35,114
Atlantic Transport	?	3,843
Total	203,587	191,206

From an analysis of the returns it results that the two German companies are credited with about 36 per cent. of the whole passenger traffic in the years 1903 and 1902, while, taking the traffic from the Mediterranean alone, their percentage was 30 in 1903 and 29 in 1902. The other percentages work out as follows (in round numbers):—for the companies of the Morgan combine, 25 in 1903 and 27 in 1902; the Cunard Line, 6½ in 1903 and 5½ in 1902; the French Compagnie Generale Transatlantique, about 8.

The ship subsidy law of Austria provides bounties and premiums. Iron and steel steamships receive an annual bounty of \$2.44 per ton, while the bounty of iron and steel sailing ships is \$1.83, and that of wooden and part iron sailing ships is \$1.23 a ton. Iron and steel sailing ships have their bounties increased by ten per cent. if built in Austrian ship yards, and by 25 per cent. if at least half of the raw material used in their construction is of Austrian origin.

SHIPPING AND SHIP BUILDING IN SCOTLAND.

The Turbine Commission has Completed its Tests as Far as Possible—Clyde Sailing Ship Owners' Association.

Glasgow, Feb. 11.—The turbine commission appointed by the Cunard Steamship Co. to consider the desirability of driving the two new mail steamers by steam turbines, have completed their tests of turbines as far as has been possible. It is practically certain that they will recommend the adoption of the steam turbine, and that four shafts and four sets of turbines will be preferred to three. Tests are in progress at the government tank at Haslar with models prepared to determine resistance and power for given speeds, but with the addition of stern brackets for carrying the four shafts and propellers. The four brackets have, of course, greatly increased resistance, reducing speed, and the problem is to devise an arrangement to give the highest propulsive efficiency. The large dimensions of the early models are still maintained, as if not much saving in weight is anticipated with the adoption of the turbine machinery; but there are other qualities of value. The question on which the committee have been most exercised is economy, and tests have been carried out not only with the two Channel steamers with different prime movers, but also on land stations where the advantage of superheaters has been compared against the results with ordinary saturated steam. The economy from the use of superheated steam is regarded as equal to nearly 1 per cent. per 10° Fahrenheit of superheat, and as 200° is not at all excessive the gain might be from 17 to 20 per cent.

The steam turbine progresses in popularity and in this country the experience gained is greater than in any other country so far. America, however, is pushing her Curtis turbine as well as the Westinghouse adaptation of the Parsons' design. France has the Rateau, and Germany has the Reidler-Stumpf. All are adaptable for marine as well as land work and some of them have advantages from the economy point of view. Two German electric works have combined to run the Reidler-Stumpf, while in the United States we hear of a combine embracing five large companies, along with the Thomson-Houston concerns in this country and on the continent. As the two Berlin works are affiliated with the Thomson-Houston, this combination has far-reaching influence. The Parsons turbine is, however, by far the most extensively manufactured by the British parent company, the Brown-Beveri makers on the continent, and by the American Westinghouse Co., and except an American yacht with the Curtis engine, three torpedo craft with the Rateau, and an experimental boat with the Reidler, all turbines used for ship propulsion at present are of the Parsons' type.

The annual report of the Clyde Sailing Ship Owners' Association states that the capital had been fairly well maintained although the withdrawals through losses had been somewhat heavy. President Clink, the chairman of the association, referred to inquiry by the Board of Trade as to the causes of the large increase of foreigners in British ships. Various causes have been assigned for this increase, but the committee stated in their report that the main cause for the decrease of British seamen in the mercantile marine was the superior attractiveness of shore employment, while the foreigners, knowing that they had better accommodation in British ships, and were also more generously treated and better fed, naturally strove to find employment in British vessels, and, having once made a start in British vessels, they would not leave them in a hurry. The Mercantile Marine Committee, recognizing that the foreigner was an absolute necessity with us, recommended an easy process whereby these men might become British subjects by naturalization, and in the hope of inducing British subjects to take to the sea, the committee had also recommended a food scale, which in the opinion of the directors, would not have the desired effect. They, therefore, did not see their way to adopt this elaborate and expensive scale. They found no reason to deviate from the scale which had been in use for the last twelve years. The shipping industry is passing through a period of depression such as President Clink says he has never experienced during his connection with shipping of nearly fifty years.

DEPRESSION IN BRITISH SHIP BUILDING.

Mr. W. F. G. Anderson of Glasgow, managing director of the great Anchor Line, is this year president of the Chamber of Shipping of the United Kingdom. Speaking at the chamber about the depression in shipping he said that in past times a reduction in British ship building usually brought about the necessary equilibrium; but now that we have so many foreign competitors, many of them enjoying bounties and subsidies, the cure does not altogether rest with ourselves. We do not claim either bounties or subsidies from our government unless for services rendered. To subsidize the British mercantile marine would, in any case, be impracticable, but for that very reason we are entitled to look to our government to relieve us from all unnecessary and unreasonable burdens and restrictions, and to protect us against the unfair competition which has been facilitated by the action of foreign governments. Foreign countries do everything they possibly can to foster and encourage their mercantile marine. The Board of Trade have taken steps to give effect to the recommendations of the mercantile marine committee, which were all calculated, in the opinion of that committee, to improve the condition of seamen and firemen serving on board merchant vessels. We look to the Board of Trade to give like effect to the recommendations of the parliamentary committee known as the subsidies committee. In the one case the object was to benefit the sailors, in the other case the ship owners. So far no steps

have been taken to follow up the report of the subsidies committee. The recommendations of the committee were: The enforcement of Board of Trade regulations against foreign ships equally with British ships: The abolition of light dues: The reservation under certain conditions of the empire coasting trade for ships belonging to the empire. As regards the first of these President Anderson sees no practical difficulty in carrying it out. There is a strong disposition to consider the susceptibilities of foreign countries, but British ship owners have found that foreign countries do not hesitate to subject British ships to the same rules and regulations as vessels of their own nationality. There can be no reason why such vessels should not be obliged to conform to the load-line requirements. The third recommendation of the subsidies committee Mr. Anderson deems deserving of consideration, viz., that the empire's coasting trade should be reserved to empire ships, and should only be thrown open to vessels of other nations who are willing to reciprocate. No doubt the proportion of this trade carried on by foreign vessels is comparatively small, but as many countries reserve their coasting trade, and as the practice is undoubtedly on the increase, it is desirable that we should have some lever to work with in order to induce the removal of such restrictions, for which we are more anxious than any reservation on our own side.

TWIN-SCREW STEAM YACHT WARRIOR.

The twin-screw steam yacht Warrior, built by the Ailsa Ship Building Co., Troon, from designs by Mr. G. L. Watson for Mr. F. W. Vanderbilt of New York, was launched a few days ago in the presence of a large company. The vessel is 239 ft. long on the waterline, with a beam of 32 ft. 6 in. and a measurement of about 1,200 tons. Messrs. A. & J. Inglis, Glasgow, supply the quadruple-expansion engines of about 3,000 H. P. which will give a speed of 15 knots. The vessel is being fitted in a sumptuous fashion, the furnishing and decoration of several of the larger cabins being carried out by a Parisian firm. On the main deck are dining saloons, boudoirs, galleys, pantries etc., with a long passage to allow guests to go from end to end of the ship under cover. A shade deck amidships forms a splendid promenade. Over all there is a flying bridge from which the navigating officers will attend to the navigating of the ship.

Once more Wm. Simons & Co., have launched with steam up ready for work, a powerful twin-screw suction pump hopper dredger. She is named the Madras, and was built to the order of the Indian government. This dredger is fitted with two powerful centrifugal sand-suction pumps each connected to one trailing suction pipe. She is propelled by two sets of triple-expansion surface condensing engines of sufficient power to give a speed of 9 knots per hour. Steam is supplied by two large cylindrical boilers constructed for a working pressure of 160 lb. per square inch. Powerful windlasses and independent steam capstans are fitted for maneuvering the vessel when at work. Ample accommodation is provided for European officers and native crew. The Madras has been constructed under the direction of Sir A. M. Renel, K. C. I. E. consulting engineer for the Indian government.

It was a memorable event in the annals of shipping when the Durban floating dock arrived the other day at its destination, all safe. This left the Tyne on Sept. 12 in charge of two tugs, and its voyage to Durban has been one of the most notable feats of the kind on record. This dock was specially built to the order of the Natal government, by C. S. Swan & Hunter to replace one constructed by the same firm which was totally wrecked on the voyage out. Underwriters in London, where the vessel was insured for £70,000, have good cause to remember that disaster, which occurred in Mossel bay in November 1902. The present pontoon dock, which is of larger dimensions, was insured for £110,000, this valuation including a self-propelling floating workshop, also constructed by Swan & Hunter. For the purpose of transport the workshop was securely fastened to the deck of the pontoon. Underwriters would have hesitated to accept the risk at the moderate premium of 7 guineas per cent. but for the fact that special precautions were taken to prevent a repetition of the previous misfortune. This time two of Smit's most powerful tugs were chartered for the towage and special care was exercised in giving the African shore a wide berth. The safety of the new dock will not only give underwriters satisfaction, but will be welcomed by the Natal government, especially in view of the necessities of shipowners for better docking facilities in Durban harbor. Although the new Durban dock is considered one of the most important built in this country, it is by no means the largest. The Bermuda floating dock was insured for the voyage across the Atlantic for £280,000.

As the new Vanderbilt yacht is now completing at Troon it may be of interest to note that it was at Troon that yacht-building commenced on the Clyde. Early in the eighteenth century the then Duke of Portland, a keen yachtsman, built a number of yachts in his own yard there. The fore-and-aft schooner Clown, owned by the Duke, was the "Defender" of those days. The Pantaloan, a square rigged brig of about 300 tons, he built and presented to the government, and since the Ailsa company started iron ship building in 1887 they have launched about a score of yachts. One of these was the Marguerite, built for Mr. Drexel, of New York, now the Alberta, and the property of the king of the Belgians.

In the year 1903, 32,393 vessels, measuring 4,935,511 tons register, used the North Sea and Baltic canal against 30,332 ships and 4,331,020 tons in the year 1902.

GENERAL BOARD TO RECOMMEND TYPES FOR NAVY.

Secretary Moody has determined that the general board of the navy shall recommend through him to congress the types and number of ships to be built each year and that the naval board of construction shall deal only with matters pertaining to the construction and designing of these ships. This attitude on the part of the secretary has created considerable discussion in naval ranks. In explanation of this matter the secretary has this week made public a memorandum regarding the report of the general board relating to the types of ships and building program dated Jan. 29, 1904. This memorandum shows that on Sept. 21, 1903, the secretary sent to the general board an inquiry as to the types of vessels required, their number and the order in which they should be provided, adding a request that the board would state their reasons for any recommendations they might make and give any advice relevant to the subject. A confidential reply was received from the general board, Oct. 17, 1903, giving a definite plan as to the types of vessels and qualities each type should possess, if it were practicable to obtain them, and recommending the order in which the vessels should be built under certain limited appropriations. This letter was referred to the board on construction for consideration as to the details of the vessels proposed and the cost of their construction, with the following letter from the secretary of the navy:

"I invite the attention of the board on construction to my letter on Sept. 21, 1903, to the president of the general board, and his reply thereto under date of Oct. 17, 1903. I shall be glad to receive the opinion of the board upon the following questions:

"1. Can ships of the general types and with the general characteristics proposed in the letter of the general board be designed and constructed? If not, in what respect do the types and characteristics require modification?

"2. What would be the cost of the ships referred to in paragraph 5 of the letter of the general board?

"3. What would be the cost of the ships described in paragraph 8 of the letter of the general board?

"4. Solely from the point of view of the present capacity of the private ship yards of the country, how many of the ships described in paragraphs 5 and 8 would it be desirable to put upon the market within a reasonable time after the next naval appropriation act goes into effect?

"5. What number of the ships described in paragraphs 5 and 8 could be constructed in the government ship yards, and how far, in the opinion of the board, is it desirable that the construction should proceed therein?"

On Nov. 27, 1903, the board on construction returned a reply in which were stated the difficulties in constructing the vessels proposed and the cost. This was referred to the general board for its consideration and comment, and a reply was returned by the general board a few days later. The secretary then called a general meeting of the executive committee of the general board and of the board on construction to discuss the question in his presence; after which the whole matter was turned over to a joint committee of the two boards, composed of two officers from each, with Admiral Dewey at its head.

Under date of Jan. 23, 1904, this joint committee reported to the secretary its agreement as to the displacement of the vessels necessary to carry out, in the main characteristics, the recommendations of the general board. It also recommended a building program considerably at variance with that already submitted by the general board. This report was referred to the whole general board for its final consideration and recommendation, and under date of Jan. 26, 1904, this recommendation was forwarded to the secretary, which is in part as follows:

"The general board has the honor to submit its final report on numbers and types of ships, in obedience to your order of Sept. 21. The original report, submitted on Oct. 17, was referred to the board on construction, to report whether ships of the types proposed could be designed, and if not, in what respect their characteristics required modification."

All these programs provide for building some of the smaller vessels. The general board goes on to say regarding such vessels:

"The reasons that influenced the general board to recommend this year proportionately more smaller vessels, including protected cruisers and squadron colliers, than battleships and armored cruisers, are given in its original report."

"The order in which it is desirable that congress should authorize the several types depends not only upon the various lengths of time required for their completion, but upon the actual deficiencies of the present fleet. In order that the fleet may develop to a complete military organization, it must be augmented symmetrically in all essential components. Squadron colliers, that is colliers of speed high enough to accompany and capacity adequate to the supply of the fleet, do not exist in the merchant marine and cannot be improvised. The reasons urged in the last paragraph of the report of the committee of conference for spending the bulk of this year's appropriation for battleships and armored cruisers take no account of the military necessity of other types. Guided by the technical knowledge of the board on construction, which submitted its report on Nov. 27, the general board, on Dec. 15, amended its original requirements for several types of ships. The board on construction having been ordered again to ascertain the practicability of designing such vessels and to ascertain their cost, reported on Jan. 16, whereupon a committee conference between the two boards was or-

dered. The report of this committee, dated Jan. 23, which has been referred to the general board, still further modifies, in certain respects, the several types, so as to embody the technical requirements desired by the general board, in so far as the board on construction regards them feasible, and so describes each type that the board on construction pronounces practicable."

The report of the general board then specifies for the different vessels, the trial speed, the approximate steaming radius, the main battery and other characteristics, and submits, in accordance with the original instructions, what it considers to be an adequate building program; what would be the building program with a limit of appropriation equal to that of last year, and what would be the building program should \$30,000,000 be appropriated by the present congress.

STEAMSHIP MONGOLIA IS SPEEDY.

The twin-screw steamship Mongolia, built by the New York Ship Building Co., Camden, N. J., for the Pacific Mail Steamship Co. was delivered to her owners last week. This great vessel was originally laid down for the Atlantic Transport Co., but was sold to the Pacific Mail Steamship Co. when the Atlantic Transport Co. was merged into the International Mercantile Marine Co. It is especially gratifying to the builders that the ship was enabled to exceed her contract speed on her trial trip by more than a knot.

The details of the Mongolia are: Length, 616 ft.; breadth, 65 ft.; depth, 51 ft. 3 in.; gross tonnage, 13,639, and displacement, 26,530 tons. Her dead-weight carrying capacity is 14,000 tons. She will accommodate 450 first-class passengers, 1,300 steerage passengers, and a crew of 250. A feature of the ship is the character of the decorations, which is a radical departure from the style generally used. The saloon is furnished in paneled oak, of a dark green shade. The music room, located immediately above the saloon, is finished in white and gold, and surmounted by a dome of cathedral glass, which at night is lighted with innumerable incandescent lamps. Immediately aft of the music room is the social hall, finished in old English oak. On the after part of the boat deck is located the smoking room. This is fitted up to represent an old Dutch drinking room, the wood work being oak, of what is known as the "old Dutch finish." It is surmounted by a dome of cathedral glass. Particular attention has been given to ventilation, and no matter how many persons may be smoking in this room the air remains absolutely pure, a system of ventilators being arranged by which all smoke is immediately removed, and this without causing any draft whatever in the room itself. The Mongolia has double bottom, used for either fresh or salt water, and the hull is divided into seven watertight compartments, making the ship practically unsinkable. She is also fitted with a new form of chemical disinfecter and fire extinguisher, reaching every portion of the ship, by which a fire, should there be one, can be instantly extinguished.

The propelling machinery of the vessel consists of two sets of quadruple-expansion engines, to carry a boiler pressure of 215 lbs. to the square inch. The indicated horse power is about 12,000. Besides the propelling machinery there is a large amount of auxiliary machinery, consisting of refrigerating and ice-making plant, electric light plant, condensers for producing fresh water, pumping machinery, steam winches, etc. The Mongolia will be under command of Capt. John H. Rinder, who for many years has been the commander of the steamship Coptic, operated between San Francisco and the Orient, and is known to practically all who make it a practice to travel between San Francisco and the far east.

THREE NEW STEAMERS FOR LA VELOCE.

The La Veloce Steamship Co. has decided to build three new steamers, which will be finer and larger than any of those now in commission for that company. These new boats will be constructed on the most modern of naval architecture; comfortable accommodations and artistic fittings. The new steamships will be built in Italian ship yards, which have recently attracted a good deal of attention because of the excellent work they have turned out. Each one of them will have a tonnage of 6,000 tons and they will be equipped with two engines having 5,000 H. P. and with twin screws. The contract calls for an average speed of 16 miles per hour. They will have accommodations for 160 first-class passengers and, of course, several times that number of second-class. They will contain handsome saloons, music parlors, smoking rooms, cabins de luxe and will be equipped with the latest improvement in refrigerating plants, electric light and ventilation apparatus. The names of the new steamers will be Argentina, Brasile and Italia. The work upon the first named will begin at once in the ship yard "Odero" at the "Foce," Italy. The construction of these boats will give a distinct impetus to the ship building industry in Italy, and their completion will increase the importance of the Italian Steamship Co., the policy of which is to secure a first place among the ocean navigation companies.

The steel steamer Like-Like was launched last week from the yard of the Union Iron Works, San Francisco, for the Wilder Steamship Co. This vessel was completely described in the ship building edition of the Review. She is 136 ft. long, 30 ft. beam and 12 ft. deep, and is intended for service between San Francisco and the Hawaiian islands.

NEWS OF THE



GREAT LAKES

WEATHER CONDITIONS AND BUSINESS OUTLOOK.

Reports from all over the lakes indicate a condition of ice which passes the memory of those now active in lake navigation. The ice in the upper lakes is much heavier than it has been for a great many years. It extends in an unbroken field as far as the eye can reach. Nearly all of the ports of Lake Michigan which maintain an all-year service by car ferries have been blocked. Three of the great car ferries of the Pere Marquette Steamship Co. were held prisoners in the ice for over a week. The ice crusher Santa Marie, one of the heaviest in the business, was crippled in her struggle with the ice last week. The car ferries that operate in the rivers have had unusually severe conditions to deal with. There is no open water to be seen at the foot of Lake Erie, and unless weather conditions change materially, few vessels will be moving before May 1, even though the disposition of vessel men should be to move them. However, the vessel interests do not desire an early opening. The outlook for the season is not promising, and there certainly are no advantages in an early start. The request made at the Lake Carriers' meeting not to hold grain for early movement, is being generally observed, only two charters having been placed so far this season. It is expected that when the season opens there shall be a great abundance of coal to go forward, but no one now expects what has come to be regarded as the normal ore movement. Furnaces are not taking ore from the docks, and naturally with an abundant available supply, sales are not being made.

OWNERS AND MASTERS.

The Pittsburg Steamship Co. has, of course, no masters or mates at present in its employ, having paid them all off at the beginning of the year. Nevertheless they were under the impression that it was not necessary to apply for their old places in order to get them. When they learned lately, however, that it would be necessary to file applications in order to get places they lost no time in doing so. Nearly all of them have now made their applications, but no appointments have been announced. In fact very few masters have made arrangements for the coming season. No action has been taken upon the schedule of wages lately presented to the owners by the Masters' and Pilots' Association, and none will be taken for the present. It is not anticipated, however, that there will be any serious differences of opinion upon the wage schedule. A number of masters who are quite intimate with their owners are not in favor of an arbitrary stand and indications point to an amicable settlement of all points at issue. Not for many years has a season presented such a dubious outlook for business.

NEW WATERLINE PASSENGER ASSOCIATION.

Representatives of all the lake passenger lines held a meeting in Detroit last week to effect a permanent organization of the International Waterlines Passenger Association. The purpose of the organization is to plan campaigns on behalf of the water transportation companies, similar to those which have become a general feature of the railway business. It was expected, by those who have already interested themselves in the organization, to gather into the fold all the water transportation companies in this country and Canada. By united effort they hope to deflect to the water routes a considerable part of the business which the railroads now receive through their campaign systems. One of the means to this end will probably be the publication of a little periodical setting forth the different modes of travel between certain points, and how they can be reached by water. The following officers were elected: President, A. A. Schantz; vice-president, Joseph Berolzheim; secretary, M. R. Nelson; executive committee, F. C. Reynolds, for two years; R. C. Davis and H. T. Brigham, for one year.

OPENING AND CLOSE OF NAVIGATION.

N. A. Linderberg, special deputy at the Duluth customs house, has prepared an interesting table, noting the dates of opening and close of navigation at the head of the lakes since 1880. The earliest date on which navigation opened during that period was in 1902, when the first vessel left Duluth harbor on March 29. The latest date of season's opening was May 15, in 1883. In 1891 the season did not close until Feb. 13, which was the latest date in the period of twenty-three years. The longest season was in 1889-90. Navigation began on April 2 and did not stop until Feb. 2, making a season of 316 days. The earliest date of close of lake navigation was in 1893, when the last vessel to leave Duluth harbor cleared on Dec. 10. The shortest season in the period of twenty-three years was during 1893-94.

when the lake opened on May 9, and closed Dec. 10, navigation extending over a period of 215 days.

Records of the years were as follows:

Year.	Opened.	Closed.
1880-1	May 1	Dec. 17
1881-2	May 8	Dec. 16
1882-3	May 15	Dec. 30
1883-4	May 9	Dec. 29
1884-5	May 1	Jan. 1
1885-6	April 27	Jan. 10
1886-7	May 7	Dec. 30
1887-8	May 4	Dec. 29
1888-9	April 21	Jan. 17
1889-90	April 11	Jan. 12
1890-1	April 2	Feb. 2
1891-2	April 30	Feb. 13
1892-3	April 20	Dec. 26
1893-4	May 9	Dec. 10
1894-5	April 16	Dec. 26
1895-6	April 11	Feb. 1
1896-7	April 12	Dec. 18
1897-8	April 17	Dec. 15
1898-9	Mar. 19	Dec. 13
1899-00	April 27	Dec. 18
1900-01	April 14	Dec. 21
1901-02	April 17	Jan. 4
1902-03	Mar. 29	Dec. 22
1903-04	April 3	Dec. 14

AMERICAN REGISTER FOR THE MYRA.

Representative Fordney has introduced a bill in the house of representatives to grant American register to the foreign-built steamer Myra, under the name of Beaumont, as soon as it is proved that the repairs upon her, made in the United States, together with the salvage, shall have amounted to three times the price paid for the wreck (exclusive of salvage) to her foreign owners. This case is of interest on the great lakes, as the Myra is owned by Mr. F. W. Gilchrist of Alpena, Mich. The Myra was built by Swan & Hunter, Newcastle, England, in 1901, for the coal trade between Louisburg, Cape Breton and Boston. She is a thorough bit of workmanship throughout and is a magnificent specimen of the shipbuilders' art. In 1902 she went ashore on the rocks on the coast of Nova Scotia, and every effort was made to get her off by foreign wreckers, but without success. Mr. James Reid of Sarnia finally offered to float her. It has already been outlined in the Review how skillfully he succeeded in doing this by blasting rocks and digging a canal from the ship to the sea. Mr. Reid later had some difficulty in collecting his wrecking bill of \$51,000 from the owners. Accordingly, Mr. Gilchrist bought the ship, paying the owners \$50,000 for it and also assuming the wrecking bills amounting to \$51,000, making in all a total of \$101,000. The wreck was then towed to a United States ship yard, where repairs were made to her which, together with the expense of getting the vessel to the ship yard, amounted to over \$100,000, exclusive of salvage charges. It is understood that the repairs are still incomplete, and that the further expenditure of more than \$34,000 additional will be required before the vessel is finished. When the vessel is ready for sea, the repair items will exceed the necessary three-fourths of the vessel's total cost required by the general law to be expended in the United States before a foreign-built vessel can be admitted to American register. It would appear as though Mr. Gilchrist had a perfect right to demand American register for this steamer, and yet important interests have appeared before the committee on merchant marine and fisheries protesting against the extension of that register to the Myra. Coastwise interests have claimed that if the Myra is admitted, the bars will be let down for the admission to the coastwise trade of a multitude of foreign-built craft. From the arguments of the opponents to American register for this vessel it would appear that vessels of this class admitted by special acts constitute a large percentage of the American merchant marine. The committee has investigated this feature and finds that during the past five years congress has only admitted five vessels, whose tonnage does not reach 6,000 altogether. In the past twenty years congress has passed seventy-seven special acts to cover the admission of vessels under conditions similar to the Myra, but as the list embraced sailing vessels and barges, less than one-third of the number so admitted are now borne on the lists. It will be seen, therefore, how erroneous is the claim that the admission of these occasional vessels in special cases of merit has worked any hardship to American coastwise interests.

Commissioner of Navigation Chamberlain has appeared

before the committee stating that he has no objection to the passage of the bill to grant the Myra American register, and the committee has recommended that register be so granted. This seems to be no more than common justice to Mr. Gilchrist.

AROUND THE GREAT LAKES.

The steamer City of Milwaukee, which is being rebuilt, will be called Holland.

Capt. C. Thronson died at Racine, Wis., last week. He was eighty-one years old.

The ice crusher Promise lost a wheel in Detroit river last week while bucking ice, and she will have to be docked.

Mr. Louis Hausheer of Cleveland will have charge of the Pittsburg Steamship Co.'s stores at the Sault and Conneaut this season.

Pere Marquette No. 14, in service between Port Huron and Sarnia, will not be docked until spring. Notwithstanding her crippled condition she is handling her business with dispatch.

Representative Jackson of Ohio has introduced a bill in the house appropriating \$312,000 for the completion and construction of piers and jetties and the dredging of the harbor of Huron, Lake Erie, to the depth of 21 ft.

Notwithstanding the condition of ice in Lake Michigan, which is said to be worse than the oldest inhabitant remembers, the Goodrich Line boats are running regularly again between Chicago and Racine.

A pile of coal three blocks long and about 20 ft. high is burning in the Pere Marquette yards at Ludington, Mich. There are 15,000 tons of coal in the pile and the fire is believed to have started by spontaneous combustion.

Capt. Samuel Neff of Milwaukee died last Sunday from pneumonia, aged sixty-two years. Capt. Neff is the owner of a lumber carrying fleet and was well known in marine circles. He sailed on the lakes since he was twelve years of age.

With the arrival of the steamer F. & P. M. No. 1 of the Barry Line from Milwaukee this week, transportation on Lake Michigan between Milwaukee and Chicago was resumed. The F. & P. M. was the first boat through in eight days.

The Great Lakes & St. Lawrence Navigation Co., better known as the Wolvin syndicate, will make Montreal its terminus during the coming season. Heretofore the company has done business exclusively between the upper lakes and Quebec.

A Chicago dispatch says that not a sale of vessel property has been reported since early in the winter. Vessel men say that it is impossible to get bids at any reasonable price for ships, owing to the uncertain condition which surrounds business for next season. There are not only no sales but few inquiries.

The meeting of the Lumber Carriers and the Longshoremen, which was held at Manistee, adjourned without coming to any agreement. Another meeting will probably be held within the next three weeks. The meeting composed all of the sixty locals on Lakes Michigan and Huron. All conditions are said to point to an agreement based upon last year's schedule.

Pere Marquette No. 19 belonging to the Pere Marquette Steamship Co., which had been on the rocks off Fox Point for two weeks, was released last week and towed to the yard of the Milwaukee Dry Dock Co. by the tugs Welcome and Meyer. The ferry was only slightly injured and it is expected will resume service upon her route by the end of next week.

Capt. Henry J. Cleary of the Marquette life saving crew has been appointed to the captaincy of the temporary station to be established on the grounds at the St. Louis exposition. Capt. Cleary has not yet decided whether he will accept the position or not. It is by no means a sinecure, as exposition drills have to be gone through with every day for the instruction of visitors.

The board of directors of the Great Lakes Towing Co. met in Cleveland on Wednesday of this week and elected Mr. Edward Smith of Buffalo as president and treasurer of the company. This, of course, was the expected thing. The following executive committee was appointed: G. A. Garretson, James Davidson, A. B. Wolvin, L. M. Bowers, C. E. Grover, R. R. Rhodes, H. G. Dalton and Edward Smith.

A large amount of repair work is being done at the lake yards. The two largest repair bills are those which will be involved in the alterations made in the passenger steamer City of Buffalo at the yard of the Detroit Ship Building Co., and the repairs to the steamer J. T. Hutchinson at Buffalo. The car ferries which are kept in commission all year around are limping periodically to the ship yards.

Mr. Harvey L. Brown of Buffalo has resigned as secretary of the Lake Carriers' Association. He was again tendered the position, but as more time would be demanded from him than formerly, he felt that he could not afford to accept. His successor will be elected at the next meeting of the executive committee of the Lake Carriers' Association. The committee desires the secretary to have his office in Cleveland, and a Cleveland man will undoubtedly be selected for the place.

Resolutions have been forwarded to Congressman Townsend by the villages and municipalities along the Detroit river from Delray to Trenton, urging the deepening of the American channel of the Detroit river. It was pointed out in the resolutions that the federal government has spent millions of dollars in deepening the Canadian channel, and as it appears to be the sentiment of vessel men that two channels should be provided it was thought that the American channel should receive the improvement.

In recognition of his services as treasurer of the National Founders' Association a complimentary dinner was given at the

Detroit club, Detroit, last week to John R. Russel, secretary and treasurer of the Great Lakes Engineering Works of Detroit. Mr. Russel was for five years the financial head of the National Founders' Association. The dinner was presided over by Mr. I. W. Frank, president of the association, and the party included friends and past and present officers of the association, as well as three brothers of the guest of honor, Walter S., George H. and Henry Russel of Detroit. Following the dinner Mr. Russel was presented with a handsome clock, 8 ft. high and beautifully carved.

During the past two weeks the Pere Marquette car ferry fleet, operating on Lake Michigan, was compelled to suspend navigation owing to the severity of weather conditions. Car ferry No. 15 was stuck in the ice off Manitowoc for six days, being hopelessly banked in anchor ice about 30 ft. deep about a mile from shore. Even the use of dynamite failed to release her. Car ferry No. 18, which ran to her rescue, also became fastened in the ice, being unable to move for three days. Car ferry No. 17 finally succeeded in releasing both 15 and 18. The cold weather has literally filled Lake Michigan with heavy ice and the weather conditions are the worst known in years. As a consequence a bad freight blockade has occurred at Milwaukee, there being over 2,000 cars awaiting transportation east via the car ferry route.

Some interesting figures have been obtained concerning the freight handled by the vessels of the Gilchrist fleet last year. This fleet is the second largest fleet on the great lakes, the fleet of the Pittsburg Steamship Co., the lake end of the Steel Corporation, of course, being first. The Gilchrist fleet last year moved 4,762,657,302 tons of freight. As it was not the policy of Mr. Gilchrist last year to enter into season contracts most of this freight was moved at the daily rate. His vessels delivered 1,941,886 tons of ore, 1,991,446 tons of coal and 723,970 tons of grain. Translated into bushels this shows that the Gilchrist fleet moved 28,958,829 bu. of grain, which was about one-seventh of the total amount received at Buffalo. With good dispatch it is estimated that the Gilchrist fleet can move 5,000,000 tons of freight in an ordinary season.

There is some stir at Buffalo in the lumber fleets in the line of making up tows and looking for business. Last season there was considerable lumber in sight as early as this by way of carrying contracts made, though the rate was not fixed. Now there is no word from the shippers and none is looked for right away, as the season is likely to open so late. It is figured that the lumber fleet will not be moving earlier than the middle of May, and barge owners are glad of it. They would like to see the opening day still later. Had it been late last season there would have been a good profit made. The following tows are made up: Barges Peshtigo, Jenness and Goshawk with the steamer Myron; barges Redington and Ogarita with the Zillah; barge Alta, lately bought by Connally Bros., J. J. Buland and others, with the Congress; barges E. L. Coyne and Kate Darley with the Westford, probably; barges Warmington and Iron City with the Ed Smith. There are several sales pending, which at present hold back the making up of other tows.

An unusual repair job has just been finished on the big car ferry Santa Marie, which operates in the straits of Mackinaw. Weather conditions have been unusually severe in the straits this winter and the ice is of extraordinary thickness. In some manner the action of the ice turned the upper edges of a number of plates below the waterline. In one place a hole was made clear through her side. John D. Langell, dry dock superintendent of the Detroit Ship Building Co., took a gang of men with him to the straits and repaired the vessel there. The ferry was listed over one foot in five, the distance when listed from her fender state to the ice on the starboard side being 12½ ft. It was necessary to wire all over the upper peninsula to get enough pig iron and ore cars to put on for the listing. No machine was convenient with which to punch the rivet holes and it was necessary, therefore, to send the plates to Marquette. Considering difficulties and inconveniences, the work was very quickly done. The Santa Marie returned to her route on Sunday night last.

MEMBERS OF THE PANAMA CANAL COMMISSION.

Rear-Admiral John G. Walker, chief of the Isthmian canal commission, has during the past week held a number of conferences with President Roosevelt regarding the personnel of the new commission, which will be appointed to supervise the construction of the Panama canal. President Roosevelt has completed the list of men whom he would like to appoint and he has communicated with all of them, but acceptances have not yet been received in all cases. It is certain that Admiral Walker will be a member of the new commission. A Louisiana man, whose name has not yet been disclosed, has been chosen to represent the south. Col. Frank J. Hecker, who was a volunteer officer on special duty in the quartermaster's office during the Spanish-American war, has been selected for a place on the commission. Col. Hecker is a resident of Detroit and a man of large experience. He served during the war at the earnest request of Russel A. Alger, who was then secretary of war. The law provides that one member of the commission shall be an army officer and the other a navy officer. The army representative will be Maj. Gen. George W. Davis, retired, who was formerly in chief command of the Philippines in Porto Rico.

The Niles-Bement-Pond Co. has declared the regular quarterly dividend of 1½ per cent. on its preferred stock. The company has also declared the usual semi-annual dividend of 4 per cent. on its common stock in two equal installments.

IRON ORE ROADS PAY ONE-SIXTH STATE TAX.

Duluth, Feb. 24.—It is an astonishing fact that the iron ore hauling roads of St. Louis county, Minn., pay into the state treasury nearly one-third of the entire tax paid by all railways of the state. In Minnesota the roads all pay a 3 per cent. gross earnings tax in lieu of all other taxes, and this amounted last year, for the three iron ore roads, to a little more than \$425,000. The entire tax paid by all roads of the state amounted to only about \$1,600,000. In addition to these taxes the mines of the county pay \$600,000 in taxes every year, which is distributed as are other general taxes, to the county and municipalities. Minnesota has a great railway mileage, and numerous large and important lines centering at Minneapolis and St. Paul, and at Duluth, aside from the three ore roads, and the fact that the latter pay a third of the state tax is really very remarkable. The total cost of operating the state is about \$2,500,000 a year, of which the mining roads pay more than one-sixth.

The Canadian Northern's new elevators at Port Arthur are about completed and work has ceased till spring. On the working house only the sheet iron and tin work remains uncompleted. All machinery is in place and is ready to turn over. The conveyor tunnels between this and the tile storage house are partly done. The storage house is completed so far as erection is concerned, though the roofs will not be put on till spring. Engine and boiler houses are done, and boilers are installed, while engines are now going up.

The addition of a 1,500,000-bu. elevator by the Northern Grain Co. of Winnipeg will make the Fort William facilities very large and will give the Canadian head of the lakes about half the capacity of Duluth-Superior.

Ice is about 40 in. thick out of Thunder bay, and as far as the eye can reach from the outermost point on Isle Royale there is no water in sight.

UNIFORM RULES FOR LAKE NAVIGATION.

That Canada is willing to take a long step to secure uniform rules of navigation on the great lakes is evidenced by the following letter to the Review from Captain Thomas Donnelly of Kingston who was one of the Dominion representatives at the recent conference at Buffalo. He says:

"At the conference at Buffalo there were present President Livingstone and Harvey D. Goulder of the Lake Carriers' Association and, on behalf of the Dominion Marine Association, Capt. S. Crangle, and A. A. Wright of Toronto, Thos. Donnelly of Kingston and the secretary of the marine association F. King. At our request Mr. J. Bertram, chairman of the Dominion Transportation Commission also attended the meeting. A very long discussion was entered into regarding the rules and every one was of the opinion that the rules for navigating the great lakes should be uniform on both sides of the line. To make a change in the White law, it was pointed out, would necessitate a special act and this might be difficult to obtain within a reasonable time. The Lake Carriers' representative claimed that the rules at present in force on the lakes viz: the White law are working very well. It was agreed to arrange with the marine department at Ottawa for the adoption of navigating rules as near like the present White law as possible and, after such consent had been obtained from the marine department, to submit the same to the executive committee of the Lake Carriers' Association. We are all in hopes of reaching a happy solution in a very short time."

GRAIN AT DULUTH.

Duluth, Feb. 24.—All the macaroni wheat in store at Duluth has been bought by one large grain shipping house and the price has been advanced 15 cents a bushel in four or five days. It seems that the prejudice with which flour men viewed this grain last year is gradually disappearing under the pressure of short supplies, and it is much easier to dispose of macaroni now than then. Many millers, not alone in the northwest, are buying and grinding it and some of the local bakeries are importing macaroni flour and blending it, making a bread that contains as high as 40 per cent. macaroni. A lot of this bread was served at the Board of Trade restaurant at Duluth and grain men didn't know it was anything out of the ordinary till they had expressed their satisfaction over its taste. Macaroni wheat is coming in very slowly now, and the country appears to have been pretty well cleaned out, but if it continues to grow in favor and sells at as high a relative price into the spring the acreage devoted to it will be very greatly extended, especially in the arid portions of the northwest, thus bringing into use lands that have not been considered safe for grain.

Receipts of all grains are small and stocks have increased slightly the past week. Flax is again going out in quantity and stocks of it are about stationary. Reports from the interior are to the effect that country deliveries are about over, and even the stimulus of dollar wheat is bringing out little above the ordinary run of car lots.

TO SERVE ON ERIE CANAL ENLARGEMENT.

Governor Odell of New York sent to the senate last week the nomination of five men to constitute the canal advisory commission, whose duties will be to watch the work of canal improvement and to make recommendations and reports. The men named are: State Engineer Bond, who will be chairman, resigning his present office; Alfred Brooks Fry, now in charge of United States buildings in New York; Dr. Elmer L. Corthell of the West Shore railroad; William A. Brackenridge of the Niagara

Falls Power Co., and Major Thomas W. Symons of Washington. Messrs. Fry and Brackenridge are Democrats.

The governor fixes the salaries at \$7,500 per year, except that of the chairman, who will receive \$8,000. In his communication the governor says the appointments were submitted for the purpose of record. They do not have to be confirmed.

INQUIRY INTO CAUSE OF WRECKS.

The bills which have been introduced in the house and senate for the establishment of a load line similar to the Plimsoll mark of the British marine has led to a congressional inquiry as to the number of vessels which are lost at sea from overloading or improper loading of cargo. It must be remembered that the Plimsoll mark is but a small part of the regulations which have given such remarkable safety to British vessels, and its importance has doubtless been exaggerated. The British rule for the ceiling cargoes of grain, for example, is an important one. If a cargo of that material was so left in hold of a ship that it could swing from side to side with the movement of the sea, the vessel might easily capsize. To prevent that grain cargoes must be ceiled across the top so that they will stand steadily. It does not appear that American coastwise traffic is suffering very heavily from improper loading. For obvious reasons an oil tank steamer, if suitably constructed and in good repair, is not troubled this way, since its load can be so easily lessened in case of danger. To an extent this is true also of a lumber-laden steamer where the deckload furnishes the real element of danger.

The principal cargoes of American sea-going sail vessels of over 100 tons burden, are lumber carried past Cape Hatteras, which is a real danger point, to Philadelphia, New York and Boston, and coal between points north of Hatteras and the North Atlantic States. Sail vessels laden with lumber cargoes invariably carry a deckload, and this constitutes the element of danger where any exists. Quite a part of the fleet engaged in coal carrying consists of old square-rigged vessels, some of which have been completely dismantled and converted into barges; and, while others are rigged like schooners for emergencies, they are usually drawn in tow. By the cutting of wide coal hatches such vessels have lost part of their structural strength. Lumber-laden vessels do not founder, but when abandoned, in course of time break up. Derelicts are almost exclusively lumber laden.

In a review of this subject the commissioner of navigation says:

"Of the seventy-four sail vessels and barges lost, the hulls of thirty were over twenty-six years old, or beyond the age entitling them to retain a class in the Record of American and Foreign Shipping, and subjecting them to the examination of that society's officers. Insurance on the vessels is reported in only eight of these thirty losses. Only one of the thirty vessels chanced to fall within the inspection laws of the United States. An act of congress subjecting the hulls of all sea-going American sail vessels and barges over twenty-five years of age, and over 100 gross tons to government inspection is more desirable at the present time, in the interest of safety to life and property, than a general load-line act. Of the thirteen lumber-laden sail vessels missing or abandoned, one was lost on the Pacific, eleven were lost in the North Atlantic or Gulf between Oct. 31 and April 16, and the remaining one on April 27. All lumber-laden vessels carried deck cargoes. Of eight coal-laden sail vessels missing or foundered, four were schooner barges, each of over 700 gross tons, cut down from old square-rigged vessels. The law now requires the annual inspection of the hulls of square and fore-and-aft rigged sail vessels over 700 gross tons. The annual inspection of seagoing schooner barges over 700 tons is even more desirable."

TURBINE EXPERIMENTS IN GERMANY.

Considerable interest attaches to the results of the trials of the German protected cruiser Hamburg as she is one of two vessels building by the Vulcan company of Stettin, for the purpose of testing the relative efficiency of reciprocating and turbine engines. The Hamburg has the ordinary piston and crank engines; the sister cruiser, to be fitted with the Parsons rotary engine, is far advanced. Both hulls are exactly alike; the length is 360 ft. 10 in., the beam 40 ft. 4 in., and at 16 ft. 5 in. draught the displacement is 300 tons. Normand boilers are used, and with twin screw reciprocating engines a speed of 23.3 knots has been realized with 11,000 I. H. P. This power is 1,000 in excess of that anticipated in design and the result was the addition of 1.3 miles per hour to the speed expected. The turbine boat has therefore a stiff task set. It will have exactly the same under water form and the same boilers, and on trial will have the benefit of reduced displacement of any economy in weight resulting from the application of the turbine system of propulsion. Each ship is to be driven to give its best result, and the weight of water and coal used to attain a given speed over lengthy run will be the measure of the work done by each system of prime mover. Curiously enough these German ships are of the same size as the Amethyst and Topaz, the British cruisers with which similar comparative trials are to be made, the former having the turbine and the latter reciprocating machinery. The length and beam differ only by inches, but the British ship is of lighter draught, and the anticipated speed with 9,800 I. H. P. is 21 3/4 knots. The British ships have twelve 4 in. guns, the German ships only ten; but the latter have more smaller guns. The great difference in the two pairs of ships, however, concerns the number of turbines, shafts, and propellers, and this is one of the questions which is at present engaging the attention of those responsible for the design of the

new Cunarders. All the ships hitherto fitted with turbine machinery in this country have had three shafts; the earlier vessels have two screw propellers on each outboard shaft, with one in the center. Experiments demonstrated that single screws on all three shafts gave higher efficiency—partly, no doubt, because of the proximity of one of the double screws, the forward one, to the hull of the ship. The Germans, however, are adopting four shafts with one propeller on each, an arrangement which will not only prove convenient for utilizing a part of the full available power when cruising at low speeds, but may give higher efficiency. The difficulty with turbines is to attain high economy and reduced power; by working two of the four shafts it will be possible, when low speed is desired, to run the turbines at almost their full power. This, however, is not the question with the Cunard commission; it is purely one of comparative propulsive efficiency at the full speed, and it is to test this question of three or four shafts that the small experimental vessel is now being equipped on the Tyne. The question of fitting turbines to high Atlantic liners is of such magnitude that it is well that every phase should be examined so as to ensure the highest degree of permanent success when the ultimate design has been fixed upon.

SEEN AND HEARD ON THE LOOKOUT.

A short while ago, with weather conditions hardly suggestive of pleasure cruising, a steam yacht satisfactorily completed her trial trips on the Clyde. A Russian once said that a woman writer committed two crimes: First, by increasing the number of books, and second, by decreasing the number of women. Whatever of truth there may be in the Russian's assertion, it is well known that seamen have little faith in women's ability to acquire any knowledge of matters nautical. The ignorant type of seaman even regards the mere presence of a woman on shipboard as portending storms, if not disasters of the gravest kind. The yacht above alluded to was designed by Mr. G. L. Watson, to the order of a woman, the Countess de Bearn. And the interior arrangements of this yacht as suggested by the owner cannot fail to prove that this French countess possesses some decidedly bright notions as to what constitutes comfort when afloat. It is generally found that on steam yachts, even those with the most lavish equipments, the deck space for promenading or lounging is limited to an insignificant spot abaft the after-house. On the Nirvana, the yacht's name, the bridge deck extends half the length of the vessel, and it is there that numerous guests may find ample accommodations when a longer sojourn in even the most artistically furnished cabin proves uninteresting. Another of this lady's so sensible stipulations was that the accommodations for her guests should be forward of the machinery, and as near the amidship as the builder could possibly arrange. In other words: Lodge my friends on that part of the vessel where seasickness is least likely to make its appearance, and where distance lends a soothing effect to the noise of the propellers. Painted white along the sides, with a green bottom, a flying falcon for figure head, and the usual rake to her tall pole masts, the Nirvana is ready for her trip to France, in which country she can boast, not only of being the latest, but also of being the second largest steam yacht afloat. Her dimensions are 220 ft. on the waterline, 30 ft. beam, and 17 ft. deep. A French marine journal claims that this craft's boiler is the largest "single-ender" ever placed in a boat. Two triple-expansion engines, each with four cylinders, will provide the power for propulsion while the usual auxiliary engines as well as the electric plant have been carefully selected.

On the principle that it is advisable to go ahead only when assured of being right, the Cunard Steamship Co. is still making inquiries as to turbines. While no one can deny that the turbine has qualities which recommend it to even the most conservative of engineers, disadvantages of the new type of engine are also being discovered. The Cunard company has decided to equip their new boats with four instead of three shafts as was previously intended. The advantages of twin-screw steamers over those with single propellers are obvious. There is, however, a belief that one may have too much of a good thing. If it be also known that these four shafts with their propellers must necessarily be provided with brackets outboard, the material increase in the resistance that has to be overcome can readily be perceived. The present tests are for the purpose of determining whether the advantages that may be derived from a fourth shaft outweigh the disadvantages from this increase in resistance. It is doubtless true that in the case of the new channel steamers a great reduction in the weight of the machinery, as compared with reciprocating engines, has been effected. But recent tests in England plainly demonstrated that the engines of the latest additions to the Cunard fleet and especially when four turbines are thought needful cannot weigh considerably less than the through them discarded type. The question of economy is also thoroughly being discussed, and this refers not so much to the cost of production as to the cost of maintenance and operation. The advantage of superheaters against the result with the usual saturated steam is being investigated. Theoretically, superheated steam is from 16 to 20 per cent. more economical than the common variety. But the Cunard company believes in practical demonstrations. The latest advices from abroad indicate, however, that the advent of the quadruple turbine steamer is imminent.

The practice of "Shanghing" seamen, though as yet not quite

obsolete, is in these days an unusual occurrence. Boarding house keepers are never interested in the movements of the American fleet of coasting schooners because no advance notes are given the crews of these craft. Especially during the cold weather numerous sailors can be found who are desirous of going south even on board a "square-rigger." And it is only when the latter has been extensively advertised among the seafaring fraternity as a "hard packet," that the gathering of a crew proves somewhat difficult. Each of the boarding bosses has generally in his house a couple of timid, foreign sailors who have failed to acquire a knowledge of local nautical gossip. Plans are now devised to ship these strangers on the vessel in question. As the captain might object to engage men who are hardly able to understand his language—and American captains are pronounced monoglots—husky longshoremen, ex-sailors, etc., are hired to "sign on" under the names of the Innocents in the Homes. At the hour of the ship's departure a tug delivers a load of mystified unfortunates who have perhaps been told that they are only bound for a run to Halifax. On one occasion not long ago a sailor managed to turn the tables on a certain sharper of the New York water front. It appears that an outward bound vessel, at anchor off Staten Island, needed one more A. B. A sailor, having been told by his boarding master that the vessel was bound for Baltimore "by the run," expressed his willingness to be rowed on board. Upon approaching the vessel, however, his suspicions became aroused from the fact that heavily laden square-riggers are not often engaged in the short distance coasting trade. Upon arriving alongside the boarding house keeper goes on deck; hauls up the sailor's dunnage, and the latter, heading the boat for the Staten Island shore, shouts to the mate: "There's your man, sir." The mate's man recently returned after an eventful trip of eleven months' duration.

And in conclusion an account of how an abused seaman traveled thousands of miles for legal redress. During an American four-master's stay in a Japanese port the mate saw fit to break a sailor's legs. The maimed seaman was placed in the hospital, a substitute speedily procured, and the vessel proceeded on her westward voyage. A few weeks ago the vessel arrived in New York harbor, and the mate was served with a summons. When skilled Japanese doctors had sufficiently repaired the damage done by the mate to make traveling possible nothing could keep the seaman in the hospital. It proved a difficult matter to secure a berth in this Japanese port on a vessel bound for the United States. Finally by stowing away on an English tramp the persevering mariner succeeded in passing Sandy Hook a few miles ahead of the vessel. The date of the trial having been set we may soon be made aware of the market value of seamen's legs.

F. H.

CHARLES H. HASWELL, DEAN OF MARINE ENGINEERING.

Charles H. Haswell, the dean of the marine engineering profession of the United States, will celebrate his ninety-sixth birthday shortly. He is on duty at the city hall in New York every day and looks as young as a man of sixty-five years. Some time ago in answer to a request for a sketch of his life Mr. Haswell contributed the following:

"Charles H. Haswell, born in New York; received a classical education, and in 1828 entered the steam engine establishment of James P. Allaire in New York city. In 1835 appointed by the secretary of the navy to design the engine and boilers for the steam frigate then on the stocks at the navy yard, New York. In 1836 appointed engineer in the navy, the first and only appointment. In 1837 designed and directed the construction of a steam launch, the very first ever essayed in any country. In 1843 appointed engineer of the navy, and in consequence of ill-health left the service in 1851. During his service in the navy he was a member of the boards that designed six steam frigates, and individually for it and the revenue service five others. Was consulting engineer of the Collins Line of steamers, and designed and directed the construction of six steamers in commercial service. Designed and directed the bulkhead at Hart's Island; the foundations of several of the large buildings of this city; tested water pump plants for cities, and is now designing and directing the improvements on Riker's island, etc. Is assistant engineer to the Board of Estimate and Apportionment. As to why he is able to perform his daily work at his advanced age: He never drank spirits nor smoked tobacco before dinner, avoided ice water, and has been a consistent member of his political party, never having scratched a ticket or dodged a nomination."

In 1840 his family physician told him he had "no constitution."

Rear-Admiral Evans, commanding the Asiatic station, has transmitted to the department a cablegram from Com'dr Staunton of the gunboat Helena, now in mud dock at Niu-Chwang, Manchuria, in which he says that conditions there are greatly disturbed and that he is vigorously investigating the report that the Russian officials have delayed certain American and British merchantmen. In the event that the American consulate is endangered, it is stated that Com'dr Staunton will land bluejackets and marines for the protection of Consul Miller. There is every wish on the part of this government not to give the slightest cause for complaint by either Russia or Japan of intervention. Rear-Admiral Evans has announced the departure of the Annapolis from Cavite for Shanghai. Upon her arrival at Shanghai the United States will have three naval vessels there, they being the Annapolis, Frolic, and Raleigh. These vessels will be ready for any emergency and will also act as dispatch boats.

OPPOSITION TO THE NAVAL BILL.

Every man is, of course, to be admired for having the courage of his convictions. Hon. T. E. Burton, representative in congress from Cleveland, has made a speech in opposition to the naval appropriation bill. The bill carries an appropriation of \$96,000,000 for the navy department. Of this sum, however, only \$29,885,000 is for new ships, authorized as follows: One first-class battleship of 16,000 tons, cost \$7,775,000; two first-class armored cruisers of 4,500,000 tons, cost each \$6,505,000; three scout ships of not more than 3,750 tons, cost each \$2,200,000; two colliers to be capable of accompanying the battle fleet to carry 5,000 tons of cargo coal, total cost, each \$1,250,000. The remainder goes for the up-keep of the navy department, the completion of ships at present on their stocks, including armor, armament and equipment, the establishment of several coaling stations and a thousand and one things which have to do with naval national defense. From this bill the only item which could really be eliminated is the one for \$29,885,000 for new ships. However, it would be a very sorry time to provide for no new construction now. If the navy is to have homogeneity, the program definitely outlined by the naval committee for some years past must be carried out. The committee has consistently acted upon the theory that for every battleship there should be two cruisers, and has worked to produce a navy whose powers of offense and defense should be well proportioned. It is impossible to agree with Mr. Burton when he says the preparedness for war does not conduce to peace. It is true with nations as with men that they live together in amity when they are independent of each other and are abundantly able to defend themselves. It is reported that Mr. Burton's speech was received with disapproval by the majority, which would seem to indicate that it will have no appreciable effect upon altering the vote upon the bill. It is natural, of course, that the minority should welcome with enthusiasm the support of so powerful a champion. The Review has no quarrel with any man who has the courage to express convictions which are sincerely his when no personal good can come from their avowal but it maintains that the time to call a halt on naval developments is not now. The United States is only fifth among the naval powers.

ELECTRICITY ON SHIP BOARD.

Some interesting facts are contained in the report of Lieut. Harry George, United States navy, inspector of electrical appliances. Among other things it is shown that the sum of \$376,964 was expended during the last fiscal year upon the installation and repair of electrical appliances on ship board, and \$212,836 on the manufacture and repair of electrical apparatus and appliances in navy yard shops. Alterations, additions and repairs to the electrical appliances of 119 naval vessels were made during the past year. A portable searchlight has been designed for use in connection with coast-defense districts and the occupation of advanced naval bases. In general, the apparatus consists of two units, each mounted on broad treadwheels, suitable for operation in a rough country, and so constructed that it can be readily assembled or disassembled for transportation in ships' boats. During the past year the bureau of equipment of the navy department has acquired two sets of the Ducretet loud-speaking telephone, marine type, extensively used in the French navy. This apparatus, together with a set of the Graham instruments, English navy type, will be tested in competition with the Bell and other instruments of American manufacture and installed on board ship for further observation. A new system of battery fire control has been designed during the year to meet the requirements of the bureau of ordnance. In this system the guns are divided into groups instead of by divisions, as heretofore, each group including all guns of practically the same nature and having the same arc of fire. The system possesses great flexibility and enables separate and distinct orders to be transmitted simultaneously to the various groups of guns. The school at the New York navy yard for the instruction of enlisted men for the rate of electricians, with a view of detail on shipboard as dynamo tenders and for the care of electrical appliances, has been successfully conducted during the past year. It will soon be moved into more suitable quarters, with additional appliances, where it is anticipated it will be still more efficient.

CANADIAN SHIPPING NOTES.

The Toronto city council is in the market for a tug to draw not more than 4 ft. 6 in., to be delivered by April 30.

Capt. McDonald, for many years connected with the Calcutta Line of steamers, died suddenly at Lindsay, Ont., recently.

The Canadian Association of Masters and Mates has formed a branch at Toronto, with Capt. McGiffen as master, and Capt. Jackson as secretary.

The Canadian Pacific Ry. Co.'s new steamer, Princess Beatrice, has been placed on a route between Victoria, B. C., and Seattle, Wash., carrying freight and passengers.

Two new tugs are being constructed on Puget sound for B. C. owners; one at Saperton for Jos. Meyer of New Westminster, and the other at Port Moody for H. A. Jones.

Capt. Coates is having built on the Saskatchewan river at Edmonton, Alta., wharves, workshops and a marine slip for the use of the steamers he is building for the river trade.

The name of the Lake Ontario Steamship Co., which is having a turbine steamer built in Scotland for the Hamilton-Toronto run, has been changed to the Turbine Steamship Co.

The Fraser River Lumber Co. has had the tug Hong Kong, which it recently purchased, thoroughly overhauled, and has

placed her in the general towing service. Capt. H. Young is in command.

The new steamer which the Canadian Pacific Ry. proposes to build for its trade on Kootenay lake, with headquarters at Nelson, B. C., will probably be built this year. Plans are in preparation.

H. H. Gildersleeve, heretofore manager of the Lake Ontario & Bay of Quinte Steamboat Co., has been appointed manager of the Northern Navigation Co. of Ontario, the head office of which is now at Toronto.

An application will be made by W. Leslie of Kingston, Ont., next session of the Dominion parliament, for the incorporation of the Coast Salvage Co., with power to carry on a general salvage and transportation business.

The city of St. John, N. B., has received an application from C. M. Hays, general manager of the Grand Trunk railway, asking for information as to the terms wharf accommodation could be obtained there for the projected Grand Trunk Pacific railway.

There is under construction at Turp's yard, Victoria, B. C., for Capt. Butler, who proposes starting a route between Victoria and Fraser river points. The dimensions of the new steamer are: Length, 90 ft.; breadth, 18 ft.; depth of hold, 7 ft. The hull will be launched early in April.

The report of the Richelieu & Ontario Navigation Co. shows that the gross receipts were \$1,104,801, the operating expenses \$894,745, the fixed charges \$20,423, and the net profit \$189,632. The amount of bonds outstanding is \$404,420, there having been cancelled during the year \$24,338 of bonds.

The bonding of freight from one point in Canada to another, via the U. S., is receiving some attention from the fact that the customs department claims to collect duty on stoves and other hardware shipped from London, Ont., via Boston to St. John, N. B., on the ground that the freight was landed in St. John from a United States vessel.

At the annual meeting of the Suisennes-McNaughton Line (Ltd.), held in Montreal, the following officers and directors were elected: President, J. O. Gravel; vice-president, A. V. Roy; managing director, A. A. Larocque; secretary-treasurer, J. O. Poliquin; other directors, C. F. Sise, H. Paton. Y. Dupre has been appointed assistant manager.

The Northern Navigation Co. of Ontario officials are: President, H. C. Hamomnd, Toronto; vice-president, W. J. Sheppard, Waubushene, Ont.; secretary-treasurer, R. O. Smith, Toronto. The head offices of the company have been removed to Toronto, but the operating headquarters will be as usual at Collingwood and Sarnia. The position of general manager has not yet been filled.

The Canadian Association of Masters and Mates has elected the following officers for 1904-05: Master, Capt. Jas. Wilson, Collingwood; first officer, Capt. Milligan, St. Catharines; secretary, W. Ireland, Parry Sound; treasurer, Capt. M. McKay, Owen Sound; pilot, Capt. Booth, Kingston; lookout man, Capt. Madden, Penetauguishene; watchman, Capt. Pearsall, Collingwood; auditors, Capt. MacIntyre, Collingwood, and Capt. McAlpine, St. Catharines.

SHIP YARD NOTES.

The tug Daring was launched from Lindstrom's ship yard at Aberdeen, Wash., for the Grays Harbor Towing Co. She is 115 ft. long, 26 ft. beam and 12 ft. deep, and costs complete \$65,000.

The two steel ferryboats designed by Wintringham & Wells for the Central Railroad of New Jersey are to be built by the Harlan & Hollingsworth Co. of Wilmington, Del. which was the lowest bidder.

The five-masted schooner Magnus Manson, building for Frank W. Benedict of New Haven, Conn., will be launched next month from the yard of the New England Ship Building Co., Bath, Me. The Manson will be the only five-masted schooner sailing from Connecticut. The dimensions are: Length, 205 ft., beam 43 ft., depth 21 ft. Her frames wil be of oak and her deck of yellow pine. Her masts will be of Oregon pine, 105 ft. long. She will have four discharging hatches and will be fitted with Hyde Windlass and Hyde hoisting engines. Her equipment will be modern in every respect.

The steamer Nushagak was launched last week from the Oakland harbor yards of the United Engineering Works. The vessel is built of steel, of the usual steam schooner type, and will be used by the Alaska Packers' Association as a cannery boat in Alaska waters. She will register about 800 tons and have an indicated horse power of about 550; her measurements are length over all, 184.6; beam, 33.6; and molded depth, 14.6; speed about 10 knots. She will be provided with a Shaw & Spiegel steam towing machine. The United Engineering Works will install the full equipment of machinery in the new vessel.

The new speed launch building for Harrison B. Moore by the Electric Launch Co., of Bayonne, N. J., from designs by H. J. Gielow, will be ready to go in commission about June 1. Her principal dimensions will be: Length over all, 60 ft.; length on load waterline, 58 ft.; beam, 7 ft., and draught, 3 ft. The motive power will be a Craig gasoline engine of 175 H. P., especially designed to meet the conditions of service in a boat of this type, the highest grade of material and workmanship being employed throughout. When asked about the speed of this boat, Mr. Gielow, her designer, said: "We hear so much of 29 and 30-mile boats, and even greater speed, lately that I feel reluctant to say anything about the real speed of this boat other than that we shall not be the last in the race."

INCREASED DRAUGHT AT LIVERPOOL.

An Area of Eighty Acres of Dock to be Improved—Progress and Enterprise of Manchester Ship Canal—Canadian-South African Trade.

Liverpool, Feb. 13.—The Brocklebank dock improvement scheme, estimated to cost \$1,500,000 was submitted for adoption at this week's meeting of the Mersey Docks & Harbor Board, and unanimously agreed to particulars of the new works I enumerated in my last letter, and I need now only add that this movement is likely to lead to many more important alterations in the character of the docks at the north-end. The dock board is exhibiting a desire to increase the number of deep water docks capable of accommodating the largest vessels afloat, and none too soon for already the pressure is very great. In fact the board admit that the docks and quays committee find great difficulty in providing adequate accommodation for regular traders to the port. However, it is a matter for congratulation that the dock board is able, at such a comparatively low cost, to get a deep-water access for no less than eighty acres of Liverpool docks.

At the time of writing I have obtained a copy of the Manchester Ship Canal Co.'s half-yearly report which is being issued to the shareholders. The total expenditure on capital account amounts to £15,237,700. The ship canal revenue receipts amounted to £207,603 and the expenditure to £117,403, leaving a credit balance of £90,200. The profits of the Bridgewater department were £10,302, and with bankers interests etc. the directors report a total profit on the half-year's working of £101,517. This sum has been mainly devoted to the payment of £44,742 as interest due upon the first and second mortgage debentures, and £80,045 to the corporation of Manchester on account of debentures they hold. The weight of toll paying merchandise which passed over the ship canal during the two half-yearly periods was: For the six months ended Dec. 31, 1902, sea-borne traffic 1,679,825 tons, compared with 1,859,303 tons in the six months ended Dec. 31, 1903; barge traffic, 147,871 tons, compared with 151,787 tons—a total of 1,827,696 tons, compared with 2,011,090 tons in the half-year just ended. The result of the half-year's working of the ship canal department was an increase of £15,715 in the receipts, an increase of £5,999 in the expenditure, and an increase of £9,716 in the profit, as compared with the corresponding period of the previous year.

IMPROVEMENTS PERTAINING TO MANCHESTER SHIP CANAL.

In this connection the promoters of the Trafford park docks and railway scheme have just made public the following particulars relating to the new works they propose to erect adjoining the ship canal at Manchester. These new works comprise (1) a dock forty acres in extent with an entrance from the Manchester ship canal (2) two wharves on the south side of the canal, and (3) a short length of tramroad, the total cost of which is estimated at £396,680. The land required for these works is valued at £3,000 per acre, which accounts for £120,000 of the cost of the dock works. The company proposed to be formed for the carrying out of this scheme will have a share capital of £350,000, so that the borrowing powers, which will be limited to £150,000, will have to be exercised partly for construction purposes.

There is after all a likelihood that the promised government inquiry into the numerous grievances of ship owners will be held, and it is authoritatively stated a motion to this effect will shortly be made in the house of commons by the president of the Board of Trade. The inquiry will be into the desirability of alterations in the law, especially with regard to the manner in which the Board of Trade regulations affect British and foreign shipping, the rules as to passenger traffic instituted in the days of the sailing ship, and the unfair differentiation of foreign powers against British shipping, as in the case of coastwise trade. This proposed course of action decided upon by the president of the Board of Trade has given great satisfaction to Liverpool ship-owners, as well as to shipping men at other British ports.

With the completion of the *Ivernia*'s present voyage on Feb. 29, Mr. Ambrose Shea, a well-known purser of the Cunard Line retires under the company's pension scheme. He is one of the best known pursers in the Cunard service, and has a fine record of service. He has always been very popular with the American traveling public and is well known on both sides of the Atlantic. Mr. Shea joined the Cunard service in 1862, and has seen service on almost all the ships of the fleet. He has crossed the Atlantic 780 times and traveled over 2,000,000 miles on the ocean. Mr. Shea lives in the United States and will not return to Liverpool.

CANADIAN-SOUTH AFRICAN SERVICE.

The new Elder Dempster liner, *Canada-Cape*, has just sailed from Sunderland for Halifax, whence she will take an early sailing for South Africa. The service in which the *Canada-Cape* will be engaged is now the only shipping connection Messrs. Elder Dempster & Co. have with Canada, but evidently Sir Alfred Jones sees something good in this remaining link, for he has caused it to be made known that this particular service in future is to be conducted in no half-hearted manner. Other new ships similar to the *Canada-Cape* are on order, and no doubt in time this new service will be extended to Jamaica and other West Indian islands and a connection made with Sir Alfred Jones' enterprises there. The new ship, which is admirably suited for the trade, gave every satisfaction in her official speed trials this week. She has been built by the Northumberland Ship Building Co., her deadweight capacity being 6,950 tons and displacement 9,550 tons. The insulation of the holds is an important feature of the ship, and it is anticipated that this advantage will figure

largely in the trade, which is to be vigorously pushed, because the greater portion of the cargo she is expected to carry will be of a perishable character. The engines for cooling the holds are placed in the 'tween decks, immediately abaft the engine room. Her speed is 11 knots. Messrs. Elder Dempster & Co. have also just inaugurated a regular steamship service between the islands of Jamaica and Cuba. The new service is being carried on by the steamship *Delta*, running from Kingston via the Jamaican outposts to Santiago de Cuba. The sailings are to be fortnightly. It is looked for that this new service will be a great acquisition for both Jamaica and Cuba, for it is sure to be well patronized by English tourists, as it considerably lessens the journey between England and Cuba.

There is a rumor current here that the order has gone forth that no officer of any grade who is not provided with a certificate of captain in the over-sea trade can now be engaged on any steamer belonging to the International Mercantile Marine Co.

Messrs. Donaldson Bros. have purchased the twin-screw steamer *Athenia*, now building by Messrs. Vickers, Sons & Maxim, Ltd., of Barrow for their Canadian service. The ship is of 8,704 tons gross, propelled by engines of 4,600 I. H. P. The principal dimensions are 478 ft. long by 56 ft. beam by 35 ft. 6 in. deep. The deadweight is over 10,000 tons and speed about 14 knots. Water ballast is arranged in deep tanks and in cellular double bottom for about 2,800 tons. In conformity with the requirements of the Canadian trade, there will be large refrigerator chambers for the carriage of butter, fruits and other perishable cargo. The new steamer will have a complete shelter deck, electric light, and all modern appliances for the rapid handling of cargo, and in every respect is expected to prove a valuable addition to Messrs. Donaldson's well-known line.

The following interesting announcement is made public this week by Messrs. William Doxford & Sons, Ltd., the well-known ship builders and engineers of Sunderland, anent the turret type of ship: "It having recently come to our knowledge that certain persons are circulating statements amongst ship owners to the effect that owners who have practical experience of turret vessels will not repeat their orders with us for this type; we at once declare the statements to be quite incorrect. We have, indeed, seldom been without repeat orders, and at the present time out of a very satisfactory order book we have eleven building to the orders of various ship owners who have had up to ten years' experience in these vessels. Beyond this we need say nothing further."

Staffordshire iron and steel masters were yesterday discussing an extraordinary report. A large steel firm in Belgium has written to its Midland agent instructing him to considerably increase his quotations for Belgian bars and billets delivered in Staffordshire. The Belgian firm declare that the long talked of coalition between German and Belgian steel makers associations has just been accomplished chiefly through the influences of the Democratic party in the German Reichstag, who objects to abnormally low export prices. If this is confirmed, Staffordshire steel will rise, and Welsh, North of England and Scotch will follow.

The shareholders meeting of the British Westinghouse Co. was held in London, yesterday, presided over by Mr. George Westinghouse, who said the accounts showed a profit of £107,609, which included £60,000, special discounts allowed by the American Company on the orders executed at Pittsburg. It was felt by the American Company that these discounts should be made in view of the fact that the Manchester factory could turn out only about one-third of the electric 1 apparatus needed for its orders, and had therefore to purchase the balance from the Pittsburg factories. In consequence of the great increase of orders, which at the beginning of the present year totalled £1,630,670, and in order to provide for the further machinery and working capital, the directors proposed that an additional 10,000 6 per cent. preference shares of £5 each should be issued. The works at Trafford Park, Manchester, were now employing 5,000 hands, and the orders received had increased from £738,000 in 1901 to £1,657,114 in 1903. The report was agreed to, and at the close of the meeting, it was stated that Mr. Westinghouse would retire from the chairmanship, and Mr. Buchanan, a new director, would be the acting chairman.

GRISCOM RESIGNS; ISMAY SUCCEEDS.

The reports which have been circulated for some time that Mr. Clement A. Griscom was to retire as president of the International Navigation Co. have now been verified. Mr. Griscom has resigned and will be succeeded by Mr. J. Bruce Ismay, managing director of the White Star Line. Mr. Griscom, who is one of the most competent steamship managers living, will not sever his connection with the company, but will continue as chairman of the board of directors. Probably no man in Great Britain is better known in the shipping world than Mr. Ismay. He has been identified with the White Star Line since 1872. He is at present in this country, but purposes leaving for England at once to settle up his affairs, and will return to the United States again in a few weeks. The home office of the company will be moved from Philadelphia to New York. Whether Mr. Ismay will live permanently in this country is not known. The resignation of Mr. Griscom is the outcome of a desire long ago expressed to retire from the active management of the affairs of the company.

MODERN BRIDGES OVER NAVIGABLE RIVERS.

The facilities for navigation furnished by the Chicago river and its branches has been one of the most important factors in the marvelous growth and development of the city of Chicago from a village sixty years ago to a metropolis and one of the

branches. This system extends freight distribution along 40 miles of dock frontage, and avoids the loss and congestion of traffic were shipping confined to a limited area on the lake front. Upon the completion of the drainage and ship canal, with the Belt ship canal to the Calumet river, more than 100 miles of additional dock

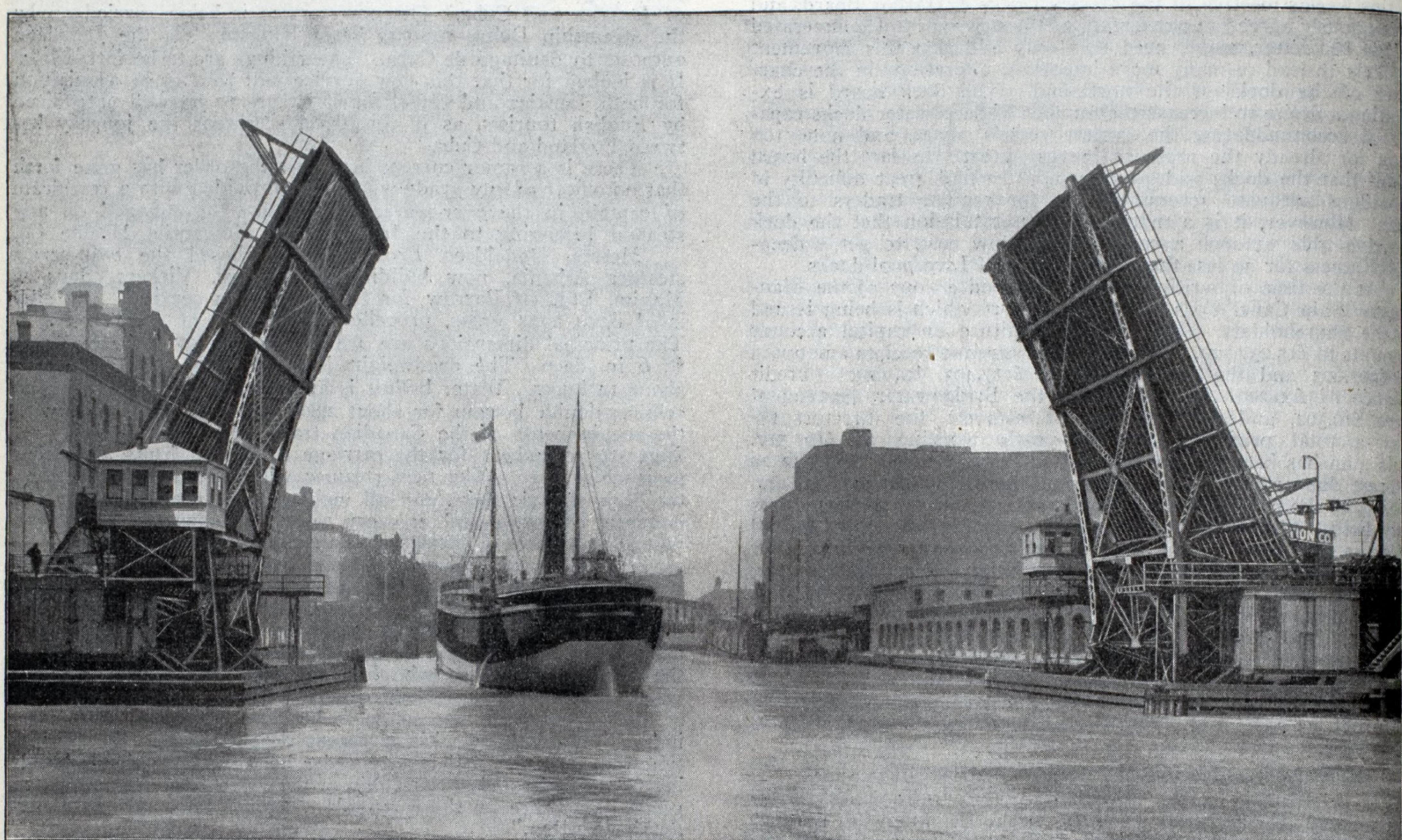


Fig. 1. Modern Scherzer Rolling Lift Bridge across Chicago River at State Street, Chicago.

principal manufacturing and transportation centers of the world. In the beginning the docks, warehouses and elevators were located along the river at its mouth, but as the shipping increased and one railroad company followed another, seeking terminals

frontage will be added to the harbor of Chicago, providing for the ever increasing demand for economical sites for manufacturing establishments and railroad terminals. The system of internal interchange of traffic between vessels, railroads and

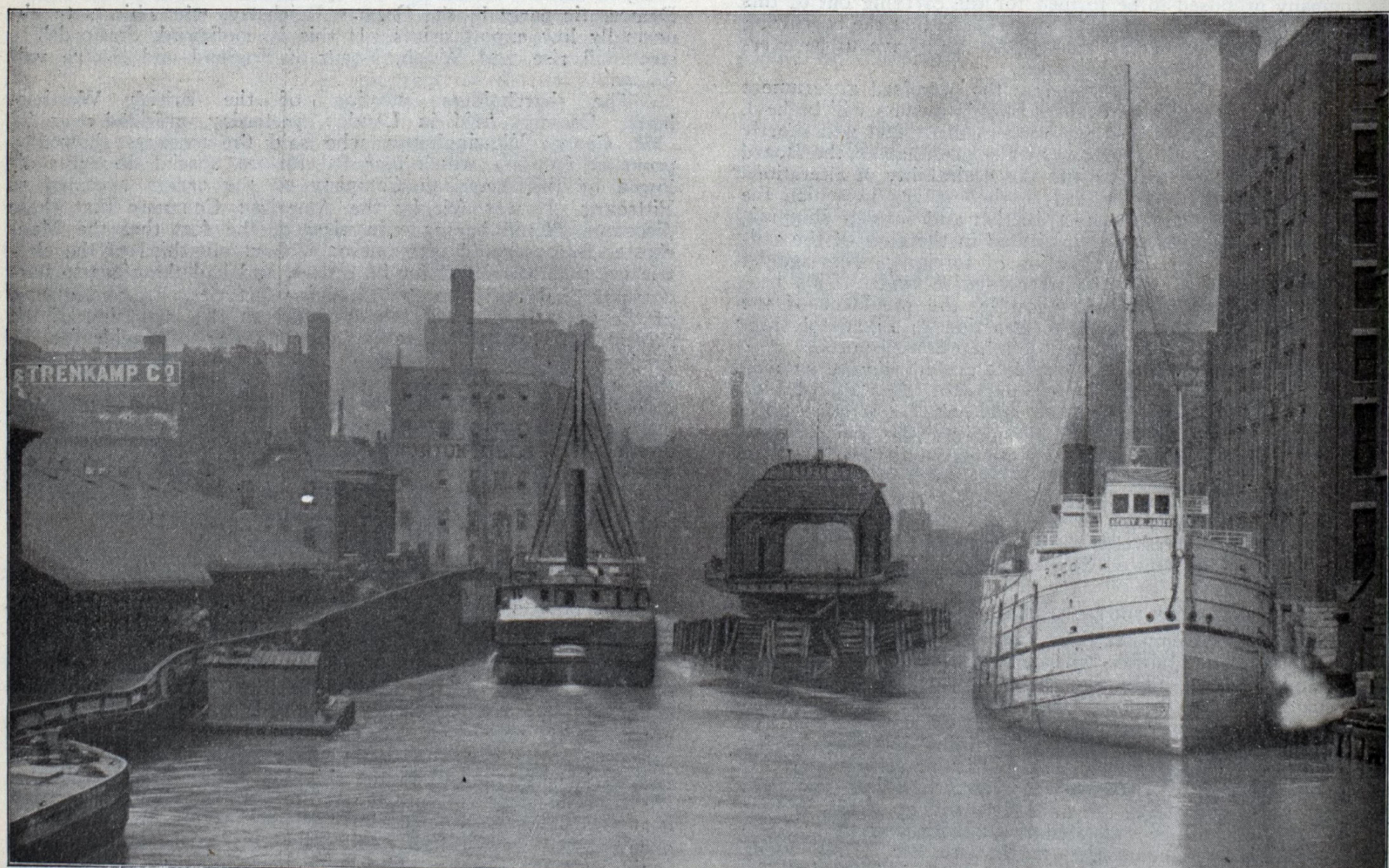


Fig. 2. Obsolete Center Pier Swing Bridge Obstructing Navigation.

at Chicago, the required area for terminals and manufacturing facilities expanded enormously. This great required area was readily supplied by improving and extending inland through the city the navigation facilities provided by the Chicago river and its

manufactories is carried on at Chicago in the most direct and economical manner on the Chicago river and its branches without delay or requiring expensive lighterage, rehandling or cartage. The vessels are not compelled to discharge their cargoes on the

lake front, where available land is limited in area and very expensive. The vessels penetrate in various directions through the interior of the city and reach railroad terminals, warehouses, elevators, docks and manufactures located on extensive areas of comparatively low priced real estate.

As Chicago grew in population, center-pier swing bridges were built at many of the streets crossing the river and its branches. With the growth in size and carrying capacity of vessels, the center-pier swing bridges became so obstructive to commerce that they not only delayed the passage of the moderate sized vessels, but absolutely blocked the large modern lake carriers from entering and navigating the river. It was then decided by the United States government authorities that no more center-pier swing bridges should be permitted to be built and the local government authorities decided to remove, as rapidly as it was possible to do so, all of the center-pier swing bridges, and to

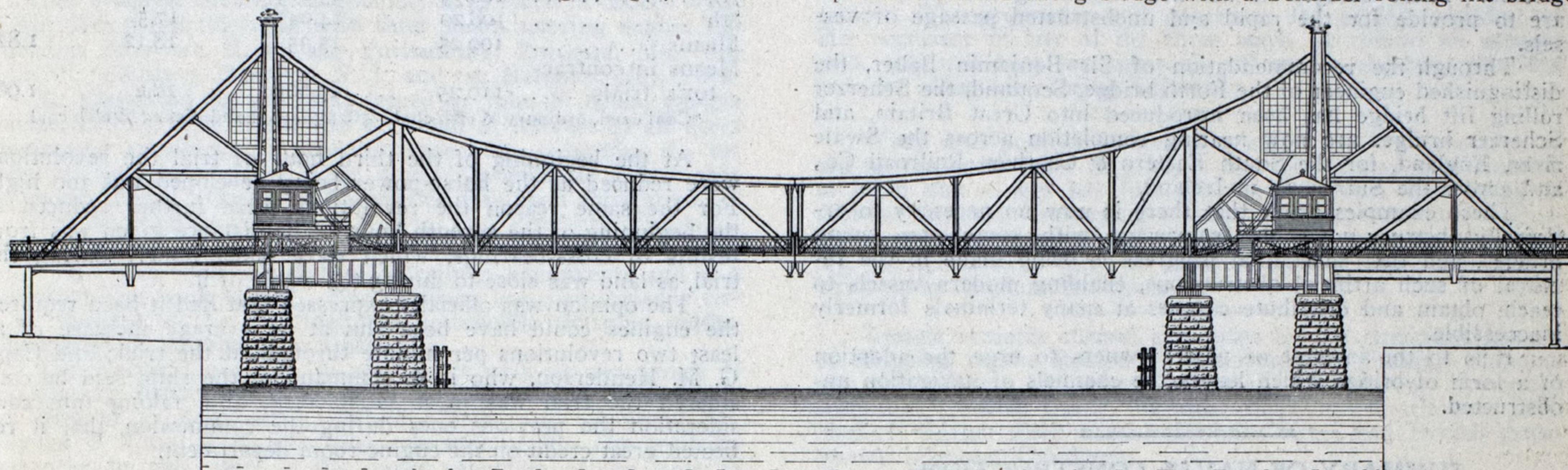
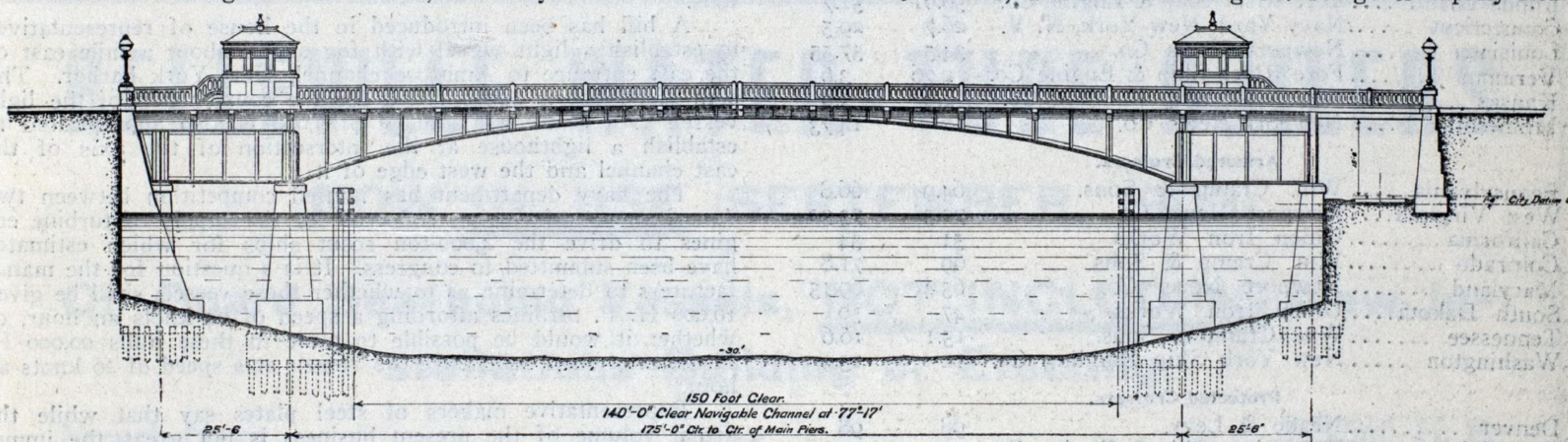


Fig. 3. New Through Type Scherzer Rolling Lift Bridge over Newton Creek Waterway, Brooklyn, N. Y.

replace them with the more modern type of bascule bridge. Although many of the center-pier swing bridges were comparatively new, and the replacement of all of them involved the expenditure of large sums of money, it was recognized as absolutely imperative in order to retain the commerce which Chicago had already acquired and to prepare and place Chicago in a position to attract and develop still greater commerce and manufacturing enterprises. Real estate, manufacturing, elevator, warehouses, dock, railroad and shipping interests all united in demanding that the improvements should be made and the funds were readily provided by public bond issues. The lesson that vessels are independent and free to go to terminals wherever the best facilities are offered was brought home forcibly to Chicago when it saw the large modern vessels, barred by artificial obstruc-

The city of Cleveland also removed the swing bridge at middle Seneca street and replaced it with a Scherzer rolling lift bridge giving a clear channel for navigation 120 ft. wide. A double-track Scherzer rolling lift bridge is now under construction across the Cuyahoga river, near Jefferson street, for the use of the Newburgh & South Shore Railway Co. The early removal of other obstructive center-pier swing bridges from the Cuyahoga river and their replacement by the more modern type of movable bridge is generally demanded, as the Cuyahoga river will continue to be the economical avenue for the interchange of cargoes between vessels, railroads and very extensive existing and prospective manufacturing establishments, located in the valley of the Cuyahoga river, Cleveland.

At Buffalo, a Scherzer rolling lift bridge is rapidly near-



Modern Deck Type Scherzer Rolling Lift Bridge over Chicago River at Harrison Street, Chicago.

tions from navigating its harbor, readily finding terminals at other ports.

While many of the center-pier swing bridges at Chicago furnished two channels, each 70 to 90 ft. in width, the middle and best part of the river was occupied by long, wide and obstructive protection piers, and the vessel interests preferred the modern bascule bridge, giving a single clear channel 100 ft. wide in the middle of the river. Gradually the width of channel provided by the new bascule bridges was increased to 110, 120 and now the maximum channel called for and provided by the latter bridges is 140 ft. wide between pier protections. This channel permits of the rapid passage of the largest lake vessels and is intended to provide, not only for the existing total tonnage of Chicago, amounting to approximately 15,000,000 tons, but is also considered ample to accommodate all possible interests in size of vessels and total tonnage at Chicago for many years to come. The piers of the new bridges are being placed deep enough so as to dredge the channel of the river to a minimum depth of 26 ft. whenever desired.

Beginning at the mouth of the river, the center-pier swing bridges have already been replaced by modern Scherzer rolling lift bridges at State street, Dearborn street, Randolph street, the crossing of the Metropolitan elevated railway, Van Buren street; Harrison street, Polk street, Taylor street, the long span railroad bridge at the entrance to the Grand Central station, Eighteenth

ing completion, giving a clear channel for navigation 120 ft. wide. The new bridge replaced a center-pier swing bridge across the city ship canal at South Michigan street.

For more than ten years prominent vessel interests endeavored to obtain the removal of a very obstructive center-pier swing bridge at the mouth of Newton creek which is a navigable waterway extending inland from the East river, between Brooklyn and Long Island city. Large ocean-going vessels required 20 to 30 minutes to pass through the narrow channel provided by the swing bridge. The pressure brought to bear upon the local government authorities after the formation of Greater New York led to a rapid solution of the difficulty. After careful investigations by the able engineers of the city of New York it was determined to remove the swing bridge and substitute a Scherzer rolling lift bridge of a form somewhat different from any constructed before that time.

Fig. 3 shows the general plan and elevation of the new bridge. The clear channel provided for navigation is 150 ft wide between protection fenders. The new bridge is expected to be placed in service within a few months. At the crossing of the Central Railroad Co. of New Jersey over Newark bay, a swing bridge is being replaced by a double track Scherzer rolling lift bridge, which will later on be enlarged to a four-track structure. The Scherzer rolling lift bridge has been received with such favor by the vessel, shipping, dock and railroad interests at the

city of New York that at the present time seven of these bridges are in process of construction for the city of New York to take the place of swing bridges.

The six-track Scherzer rolling lift bridge in operation for a number of years across Fort Point channel, at the South Terminal station of the New York, New Haven & Hartford Railroad Co., Boston, was so satisfactory that it led to orders for a four-track Scherzer rolling lift bridge to take the place of a swing bridge for this railroad company at Bridgeport, Conn. The new bridge had recently been placed in service, and at the present time another four-track Scherzer rolling lift bridge is in process of construction for this company, taking the place of a swing bridge at Cos Cob, Conn.

The Metropolitan park commission are constructing Scherzer rolling lift bridges across the Malden and Saugus rivers at Boston. These bridges in addition to having artistic outlines are to provide for the rapid and unobstructed passage of vessels.

Through the recommendation of Sir Benjamin Baker, the distinguished engineer of the Forth bridge, Scotland, the Scherzer rolling lift bridge has been introduced into Great Britain, and Scherzer bridges are now nearing completion across the Swale river, England, for the South Eastern & Chatham Railroad Co., and across the Suir river in Ireland.

These examples prove that there is now no necessity to artificially obstruct navigable waterways with center-pier swing bridges, and that substantial progress is being made in the removal of such artificial obstructions, enabling modern vessels to reach, obtain and distribute cargoes at many terminals formerly inaccessible.

It is to the interest of vessel owners to urge the adoption of a form of bridge which leaves the channels of navigation unobstructed.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of naval construction, issued by the bureau of construction and repair, shows commendable progress being made upon the various classes of naval craft. The battleship Louisiana still continues well ahead of the Connecticut. Following is the summary:

Name.	Building at	Degree of completion.	
		Jan.	Feb.
Battleships.			
Missouri	Newport News Co.	99.9	99.95
Ohio	Union Iron Works	84.5	85.5
Virginia	Newport News Co.	52.5	53.8
Nebraska	Moran Bros. Co.	35	37.7
Georgia	Bath Iron Works	42.5	45.4
New Jersey	Fore River Ship & Engine Co.	49.43	50.3
Rhode Island	Fore River Ship & Engine Co.	50.61	51.7
Connecticut	Navy Yard, New York, N. Y.	26.7	29.5
Louisiana	Newport News Co.	34.5	37.55
Vermont	Fore River Ship & Engine Co.	2.76	3.6
Kansas	New York Ship Building Co.	2.6	3.9
Minnesota	Newport News Co.	12	14.73
Armored Cruisers.			
Pennsylvania	Wm. Cramp & Sons.	64.9	66.8
West Virginia	Newport News Co.	70.5	73.32
California	Union Iron Works.	51	54
Colorado	Wm. Cramp & Sons.	69	71.8
Maryland	Newport News Co.	65.4	69.15
South Dakota	Union Iron Works.	47	50
Tennessee	Wm. Cramp & Sons.	15.1	16.6
Washington	New York Ship Building Co.	12	13.9
Protected Cruisers.			
Denver	Neafie & Levy.	98	98
Des Moines	Fore River Ship & Engine Co.	97	99
Chattanooga	Lewis Nixon.	72	72
Galveston	Wm. R. Trigg Co.	70.5	72
Tacoma	Union Iron Works.	99	100
St. Louis	Neafie & Levy.	36.2	37.9
Milwaukee	Union Iron Works.	41	42.5
Charleston	Newport News Co.	56.9	60
Gun Boats.			
Dubuque	Gas Engine & Power Co.	20	25
Paducah	Gas Engine & Power Co.	16	22.2
Training Ships.			
Cumberland	Navy Yard, Boston.	12	25.5
Ontrepid	Navy Yard, Mare Island.	5	7
Training Brig.			
Ecker	Navy Yard, Portsmouth.	6	10
Torpedo Boats.			
Stringham	Harlan & Hollingsworth.	93	93
Goldsborough	Wolff & Zwicker.	99	99
Blakely	George Lawley & Son.	99	99
Nicholson	Lewis Nixon.	99	99
O'Brien	Lewis Nixon.	98	98
Tingey	Columbian Iron Works.	100	
Steel Tugs.			
Pentucket	Navy Yard, Boston.	100	
Sotoyomo	Navy Yard, Mare Island.	98	99

MACHINERY TRIAL OF BATTLESHIP IRRESISTIBLE.

The battleship Irresistible, one of the ships of the Mediterranean squadron, had a full-power trial of her machinery lately, it being stipulated that the indicated horse power was not to exceed 15,000. She is fitted with Belleville boilers of the economizer type. The result was as follows:

Hour.	Mean rev. per minute.	I. H. P. developed.	Speed, knots	Coal per I. H. P. per hour.
1st	110.25	15,861	18.5	—
2nd	109.80	15,803	18.2	—
3rd	109.70	15,322	17.9	—
4th	109.15	15,342	18.2	—
5th	108.90	15,518	18.3	—
6th	109.20	15,019	18.2	—
7th	108.75	15,014	18.2	—
8th	108.20	14,943	17.5	—
Means	109.25	15,352	18.12	1.82*
Means in contractor's trials	110.25	15,603	18.2	1.96†

*Coal used, ordinary Welsh coal. †Coal used, hand-picked Welsh coal.

At the beginning of the third hour of trial the revolutions were reduced as the horse-power being developed was too high. For the same reason the revolutions were further reduced at the beginning of the seventh hour. The distance given was from results of cross-bearings, which were taken hourly during the trial, as land was close-to during the whole of it.

The opinion was officially expressed that had it been required the engines could have been run at an average increase of at least two revolutions per minute throughout the trial; and Capt. G. M. Henderson, who is in command of the ship, said he considered the trial was most satisfactory, and, taking into consideration the previous ones during the commission, that it reflected great credit on the engine-room department.

ITEMS OF GENERAL INTEREST.

It is reported that the well known Paris firm of sailing ship owners, Messrs. A. D. Bordes & Son, intend to discard sailing vessels in favor of steamers, the existing bounty law being more favorable to the latter than the former.

The department of marine and fisheries of the Dominion government has purchased ten submarine signaling bells which will be placed along the Nova Scotia coast and the Gulf of St. Lawrence. This is the Mundy device which has already been described in the Review.

The steamship Matina was recently launched at Wallsend-on-Tyne for the United Fruit Co. of Boston. She is intended for foreign service and is the first of three steamers to be operated between Port Limon and Manchester and Bristol, England. She is built to carry a deadweight cargo of about 5,000 tons.

A bill has been introduced in the house of representatives to establish a light vessel with fog signal about a mile east of the east entrance to Ambrose channel, New York harbor. The sum of \$90,000 is appropriated for the construction of the light vessel. An additional sum of \$125,000 is also appropriated to establish a lighthouse at the intersection of the axis of the east channel and the west edge of it.

The navy department has invited competition between two American manufacturing concerns for the supply of turbine engines to drive the 4,000-ton scout ships for which estimates have been submitted to congress. It is a question for the manufacturers to determine as to whether these vessels shall be given 16,000 H. P. turbines affording a speed of 24 knots an hour, or whether it would be possible to place in these hulls 20,000 H. P. motors, which will drive the vessels at a speed of 26 knots an hour.

Representative makers of steel plates say that while the actual volume of the present business is not great, the immediate prospect is highly encouraging. The local demand in New York is undergoing decided improvement, owing to the stocking up of dealers and the prospect of more activity in the ship yards. One of the indications of better business is the fact that the railways entering New York are asking proposals on six new ferry boats. These are in addition to the city undertakings in connection with the Staten Island ferry line.

The bill to confine shipping between ports of the United States and ports of places in the Philippine archipelago to American vessels purposes that the measure shall go into effect after July 1, 1904. Senator Carmeck has now offered an amendment in the senate to extend the time to 1909. He also adds the following provision to the bill: "That hereafter any duty or tax levied and collected upon the exportation of any article, the product of the Philippine archipelago shall be levied and collected whether such article be exported to the United States or to any other country, it being a policy of the United States to maintain the open door in the said Philippine archipelago."

The credit men of some of the largest jobbing and manufacturing houses of Cleveland have organized the Cleveland Credit Men's Association under the supervision of the National Association which was organized some years ago in New York. The purpose of the association is briefly the protection of creditors. Through the efforts of the Credit Men's Association several states of the union have passed laws prohibiting the sale of stocks of goods in bulk unless the creditors are all properly protected. In some states the association has succeeded in having laws passed preventing one creditor from being preferred over another.

TRADE NOTES.

The Crandall Packing Co., Palmyra, N. Y., has just issued a catalogue, well indexed, devoted to packings for steam, ammonia and hydraulic purposes.

A circular has just been put out by the American Steel & Wire Co. devoted to iron telegraph and telephone wires, double galvanized. The circular will be sent to anyone upon request.

Herbert W. Cole, who established the Star Drilling Machine Co. of Akron, has organized the Crown Drilling Machine Co. of Akron, for the manufacture of the Crown drilling machine.

Capt. H. J. Hutchins of Bay City, Mich., who was the first officer on the steamer J. H. Reed during the past season, has been appointed as assistant instructor in the Chicago nautical school, Masonic temple, Chicago.

The Moulton Steering Engine Co. have received orders within the past month to equip with their steam steering engine tug Solicitor, Newport, R. I.; tug Portsmouth, Portland, Me.; tug John W. Gilkinson, Hoboken, N. J., and tug Hercules, New York.

An illustrated placard lately issued by John F. Allen, 370-372 Gerard avenue, New York, will be found of interest by all users of riveting machines. It presents some facts regarding the results accomplished by the Allen portable pneumatic riveter that are worth noting. Copies will be mailed free upon application.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., is almost unrivaled in the excellence of its trade catalogues. The latest one deals with auxiliaries for railway equipments and is a very beautiful book indeed. The company has also issued a circular devoted to the Westinghouse automobile charging outfits, which is to be secured upon application.

The Nernst Lamp Co., in accordance with its new policy of establishing district offices in the large cities, has recently opened an office at 47 State street, Detroit, Mich., and appointed Mr. Charles F. Case as district sales manager of it. The territory embraced by this office is the lower peninsula of the state of Michigan, the northwestern part of Ohio and the northeastern part of Indiana.

The Jeffrey Mfg. Co., Columbus, O., have just issued a circular devoted to the Jeffrey grab bucket. Some of the points of excellence of this bucket are that it will work in ore, run-of-mine coal, broken limestone, gravel and sand. It is self-filling and will excavate in clay, gravel and soft earth. It will handle metal, soft or cold, wet or dry, up, down, straight along, sideways, any size and any distance. A catalogue may be had for the asking.

The Phosphor Bronze Smelting Co., 2200 Washington avenue, Philadelphia, Pa., has issued a revised price list, No. 22, cancelling and withdrawing all previous quotations. The company announces that its new rolling mill is now in successful operation and with greatly improved facilities and a well assorted stock of manufactured goods, it is able to supply the trade

promptly. The price list, which is issued in very convenient book form, will be sent to anyone desiring it.

The Buffalo feed water regulator, manufactured by R. Learmonth, 100 White building, Buffalo, N. Y., is an apparatus designed to maintain a certain level of water in a steam boiler. The inventor has used only natural forces to operate the device and consists of the heating and cooling of a straight copper tube, which, when heated, expands, and when cooled contracts and becomes shorter. The heat is supplied from the steam in the boiler and the cooling medium is the water taken from the boiler. The actuating force is sure and cannot fail. By this motion a small valve is operated to increase or decrease the pressure on a diaphragm valve, which regulates the supply of water to the boiler. This device will regulate the water supply in three ways, viz: By the steam to the pump; by shutting off the surplus water from going in and by letting the surplus water escape. The proprietor will guarantee the perfect working of this regulator in any of the three ways, or refund all moneys paid, and will take the apparatus off at his expense, provided it is let alone after being adjusted.

When it is possible to unload a cargo of over 5,000 tons of ore on the great lakes in 3 hours and 45 minutes it is amazing to learn that a ship has just left Santa Rosalia after being in port for 114 days discharging a cargo. The captain wrote a gruesome report on the scarcity of lighters and means of discharging. Imagination is futile to conceive what a lake owner would write under similar conditions.

Vessels recently classed and rated by the American Bureau of Shipping in the Record of American and Foreign Shipping are as follows: American schooner Wyomissing, American schooner James B. Drake, American three-masted schooner D. J. Sawyer, British three-masted schooner Mona and British three-masted schooner Caledonia.

Marine Fire Box Boiler for Sale.

16 ft. long, 9 ft. 6 in. diameter; allowed 125 lbs. steam; in good condition. Price reasonable. Address Capt. John Green, 402 West Ferry St., Buffalo, N. Y. Feb 25

Gasoline Launch for Sale.

Length 25 ft 6 in., beam 6 ft. Stationary roof and side curtains. 7½ H.P. Speed about 10 miles. In first class condition; almost new. Apply to Capt. John Green, 402 West Ferry St., Buffalo, N. Y. Feb. 25

BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (SEPTEMBER, 1903)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	355,560 H. P.
English Royal Navy	929,300 "
Russian Imperial Navy	227,500 "
Japanese Imperial Navy	122,700 "
Austrian Imperial Navy	56,700 "
Italian Royal Navy	13,500 "
Chilian Navy	26,500 "
Argentine Navy	13,000 "
The "Messageries Maritimes" Company	87,600 "
Chemins de fer de l'Ouest: (The French Western Railway Co.)	Steamships
plying between Dieppe and Newhaven	18,500 "
Total Horse Power of Boilers in Use	1,850,860

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ADMIRALTY CHARTS.

Following are the latest charts of the hydrographic department, British admiralty, sold by J. D. Potter, admiralty chart agent, 145 Minories, London:

1698—England, south coast:—Dover bay.
 1951—England, west coast:—Liverpool bay. Prince's dock.
 2326—Scotland, west coast:—Loch Killisport to Cuan sound, including the sound of Jura.
 3377—Norway, west coast. Lofoten islands:—Ure to Bretlesnes.
 3372—Greece, south coast:—Gulf of Lakonikos.
 3389—Black sea, sea of Azov:—Taganrog gulf.
 444—West Indies, Cuba:—Cienfuegos bay (port Xagua). Entrance to Cienfuegos bay.
 3413—South America, north coast. Margarita island:—La Mar bay.
 3382—Gulf of Mexico. Mississippi river:—The passes to New Orleans.
 1782—Peru:—Pisco bay to St. Elena point.
 3393—Alaska:—Pribilof islands.
 796—Malacca strait. Approaches to Malacca:—Pyramid shoal to Pulo Besar.
 3394—Celebes:—Tanjong Lutuno to Dondo point.
 3407—Philippine islands. Mindanao, north coast:—Murcialegos bay.
 3369—Philippine islands:—Luzon island to Masbate island, including Tikao island.
 3401—Philippine islands. Kalamianes group. Kulion island:—Halsey harbor.
 3392—Philippine islands. Luzon, west coast:—Port Bolinao.
 3386—China, east coast; Mirs bay:—Long harbor and approaches.
 3388—China, north coast:—Terminal head to Hai Yung Tau, including Elliot and Blonde groups.
 2436—Japan. Liukiu islands:—Unten ko.
 3395—Japan. Plans on the west coast of Nipon:—Futami anchorage.
 3374—Japan. Nipon, south coast:—Benten saki to Miwazaki, including Urakami ko and Katsuura wan.
 3325—Japan, inland sea:—Channel between Neko seto and Mitsugi.
 3391—Solomon islands. Anchorages in Ysabel island:—Korrigole harbor. Vulavu anchorage.
 3398—Solomon islands. Anchorages in Ysabel island:—Maringe lagoon.
 3199—Solomon islands. Anchorages in Ysabel island:—Kesuo cove. Tunnibuli.
 2293—Mexico, south-west coast. Ports in gulf of California.

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New Plan:—Approach to La Paz harbor. Plan added:—La Paz harbor.

3138—Anchorage in south-east Alaska. Plan added:—Hassler harbor.

2772—Eastern archipelago. Anchorages in Gillola. Plan added:—Foja anchorage.

2718—Celebes. Anchorages on the east coast. Plans added:—Totok bay. Paguyama river entrance. Tomini road. Una una road. Togean anchorage. Luwuk bay. Arjuno bay. Lelomping bay.

976—Philippine islands. Luzon island. New plan:—Port Mariveles.

2975—Japan. Anchorages on the west coast of Yezo island. New Plan:—Yesasbi anchorage.

Charts that have received additions or corrections too large to be conveniently inserted by hand, and in most cases other than those referred to in the Admiralty Notices to Mariners:

954—Ireland, west coast:—Achill sound, southern entrance.

2289—Norway:—The Skagerrak.

2842a—Baltic sea.

2331—Baltic sea. Gulf of Finland:—Haugö head to Barö sound.

173—Baltic sea. Gulf of Finland:—Approaches to Helsingfors and Sveaborg.

2224—Baltic sea. Gulf of Finland, Helsingfors, Sveaborg, and parts adjacent.

2364—Germany, north coast:—Lübeck bay and Femern belt.

2863—East coast of United States:—Cape Fear river.

2677—West Indies. Leeward islands:—Culebra or Passage island.

2452—West Indies. Leeward islands:—Virgin islands, sheet III.

2002—South America, east coast:—Rio Grande do Sul.

3271—British Columbia:—Alert bay.

2448—British Columbia:—Approaches to Fitz Hugh and Smith sounds.

2463—Alaska:—Port McArthur to Windham bay.

2462—Alaska:—Windham bay to Icy cape.

608—Africa, west coast:—River Gambia entrance.

149—Africa, west coast:—Old Calabar river.

671—Africa:—Plans on the east coast.

2760—Sumatra, west coast. Sheet I:—Acheh head to Tyingkok bay.

709—Sumatra, west coast:—Ujong Masang to Ujong Indrapura.

1696—Eastern Archipelago:—Lombok to Flores.

2195—Celebes:—Sketch plans of anchorages.

2914—Philippine islands. Palawan island:—Port Princesa.

976—Philippine islands:—Manila bay.

2562—China, south coast:—Canton river with its western branches to Samshui.

2409—China:—West coast of Formosa.

2357—China, north coast:—Ching Wang tao road.

3033—South Pacific ocean:—New Hebrides islands and New Caledonia.

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